Auto Air Conditioning Reports . . . . . See Listing In Col. 5

AIR CONDITIONING HEATING & REFRIGERATION NEWS

The Newspaper of the Industry

RESIDENTIAL — COMMERCIAL — INDUSTRIAL

April 17, 1961

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Silver Shielders Hold Dual Meetings In North, South

CLEVELAND — Due to the rapid expansion of Silver Shield activities in the nation, two spring Silver Shield dealer meetings have been scheduled this year—one in the south and one in the north, the National Warm Air Heating & Air Conditioning Association announced.

The spring meeting is an annual one-day get-together in which "Silver Shielders" from each city meet to compare notes and swap ideas on their respective local Silver Shield activities.

The southern meeting will be held Friday, April 28, at the Jung hotel in New Orleans. It will be attended by members of Silver Shield-sponsoring Indoor Comfort bureaus in southern cities.

The northern meeting, at-

(Continued on Back Page, Col. 1)

Roberts Named York General Products Mgr.

YORK, Pa. — William H. Roberts, formerly development manager of central equipment for the Carrier Air Conditioning Co., has been named as general product manager at the York Div. of Borg - Warner Corp.

W. H. Roberts

Roberts will coordinate the activities of the various prod-

(Continued on Back Page, Col. 1)

Atlantans Try To Clarify Electric Heat Jurisdiction

ATLANTA — After nearly two years of effort, a joint industry committee here has drawn up a set of suggestions for consulting engineers that it hopes will minimize jurisdictional or on-the-job disagreements between mechanical and electrical contractors over the furnishing and installing of electric heat.

Ten specific electric heating products are covered in the suggestions including: bathroom type heaters, baseboard, unit heaters, duct heaters, combination package air conditioners with electric heating, starters and contactors, temperature sensing devices, control wiring, power wiring, and combination starter-disconnects.

The suggestions have no legal force, but the committee believes that if architects and engineers follow these suggestions in drawing up their plans and specifications, present overlapping of responsibilities and possible areas of conflict will be eliminated.

While the suggestions apply only to the Atlanta area, they may prove of national significance by setting a precedent. Atlanta probably has more and bigger installations of electric heat than any other large city, thanks in no small part to the aggressive promotion and surprisingly low rates of the local utility, Georgia Power Co.

Text of the suggestions follows:

1. **"Electric Bathroom Type Heaters,"** for any type heating in wall, built-in or package type

(Continued on Back Page, Col. 2)

1960 Auto Air Conditioner Sales Reach 697,021, Up 20% over '59

By JOHN MacLEAN
Statistical Editor

DETROIT — Still a strong, growing market.

That pretty well summarizes the annual AIR CONDITIONING, HEATING & REFRIGERATION NEWS survey of the automobile air conditioning market. 1960 sales reached 697,021 units, up a healthy 20% over the 580,721 units installed in 1959.

1960 sales pushed total automobile air conditioner sales past the 2,500,000 mark during the eight years the NEWS has been keeping track of them, and it's estimated that almost all of the units are still in existence. Listed in Table 1 are sales totals by year.

Table 1—Automobile Air Conditioner Sales By Years

1953	40,600
1954	90,000
1955	176,000
1956	285,110
1957	405,404
1958	383,867
1959	580,721
1960	697,021
TOTAL	2,658,723

As a group, auto manufacturers' sales rose 19%, while independent automobile air conditioner manufacturers' sales increased over 22%, and maintained their share of the total market at 27%. Independent manufacturers sold 192,834 units, compared to 504,187 units sold through automobile manufacturers.

The strong sales increase came in spite of a sales drop in the Southwest, usual hotbed for auto air conditioner sales. The Southwest still accounts for the largest percentage of sales, but the rest of the country, outside of the Northeast, has developed in a big way.

Table 2 on page 26 shows 1960 and 1959 sales by regions.

Sales by automobile manufacturers were somewhat surprising, since 20% of the cars produced during 1960 were of the compact variety, and factory designed units were not available for the 1960 compacts. Therefore, air conditioning of standard sized cars increased even more than the sales figures indicate.

Members of the Automotive Air Conditioning Association reported sales of 14,819 compact car units. All manufacturers, except Studebaker, offer a factory air conditioner for their '61 compacts.

Approximately 15% of the automobile air conditioner manufacturer units were dealer in-

(Continued on Page 26, Col. 1)

List Responsibilities

12 Makers Back Standard 1-Year Warranty on Auto Air Conditioners

DALLAS—In a move said to reflect the quality manufacture of the "after-market" type auto air conditioners, D. A. Brown, executive director of the Automotive Air Conditioning Association, issued a statement concerning the warranty policy backed by 12 national manufacturers in this group.

The 12 manufacturers "warrant to their own customers that they will properly discharge the following responsibilities:

"1. To replace or exchange to the original purchaser, any part or parts of the unit found to be defective in material or workmanship.

"2. Any such defect must be found within 12 months, or 12,000 miles, whichever shall occur first, from the date of original installation.

"3. This warranty is effective at any authorized dealer of the manufacturer within the United States.

"4. This minimum warranty does not necessarily include the labor of parts replacement, of loss of refrigerant, or normal maintenance.

"5. All association members agree to maintain a reserve of sufficient size to properly carry out this warranty. Any violations of this warranty should be reported to the association's business office at 4924 Greenville Ave., Dallas 6, Texas."

The following manufacturers, it was stated, back this warranty to their customers: A. R. A. Mfg. Co., Cartrol Corp., Clardy Mfg. Co., Climatic Air, Eaton Mfg. Co. (Heater Div.), Frigikar Corp., Frigiquip Corp., International Automotive Air Conditioning, Inc.; Lindustries, Inc.; John E. Mitchell Co., Parkomat Mfg. Co.; Vornado Auto Air Conditioner Corp.

Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Shoe on the Other Foot

When this callow writer entered the business world, and for more than two decades thereafter, the college professor had a status somewhat similar to that of your queer Aunt Harriet who read tea leaves and studied the Zodiac.

"Those who can't do, teach," was an accepted axiom.

Moreover, academic excellence in itself was deemed virtually anti-social. "C" was the "gentleman's grade" for high school and college students.

Quickly "Dope" learned that it was a horrid mistake to wear his Phi Beta Kappa key anywhere, anytime, and especially at a business convention!

My, how times have changed. Nowadays professors are in the saddle, and mere businessmen in the doghouse.

Six months ago, as a measure of self - protection, "Dope" bought a vest, and resurrected that previously hidden Phi Bete passport to social acceptance.

That didn't work, either.

'Whole Man' Randall

Few men are so privileged, or so well armed, to view this transformation dispassionately as is Clarence B. Randall. He is a Harvard Ph.D. who later

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More Stories On Auto Cooling

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CONTROL MAKER FINDS OLD RULES DON'T APPLY TO AUTO COOLING 24

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MAGNETIC CLUTCH ACCEPTANCE STANDARDS 40

FOREIGN CAR INSTALLATIONS offer good market, but labor allowance must be ample. Manufacturer offers table of hours for guide 41

Dunham-Bush Names Roth Marketing Mgr.

WEST HARTFORD, Conn.—Cecil Boling, president, Dunham-Bush, Inc. here, manufacturer of air conditioning, refrigeration, heating, and heat transfer products, has announced the appointment of J. L. Roth to the newly - created position of marketing manager.

J. L. Roth

Roth "will immediately assume direction of a dynamically

(Continued on Page 26, Col. 5)

Can Cool Classrooms Lure Students?

OBTAIN YOUR DEGREE IN LESS TIME

or added credits, through SUMMER COURSES

in air-conditioned classrooms at the

UNIVERSITY OF MIAMI

JUNE 15th to JULY 22nd — or — JULY 25th to AUGUST 29th

OFFERING ASE UNDERGRADUATE AND GRADUATE COURSES, INCLUDING ACCOUNTING —ART—BUSINESS MANAGEMENT—CHEMISTRY—ELECTRICAL ENGINEERING—GEOLOGY —JOURNALISM—LAW—MUSIC—PHYSICS—PSYCHOLOGY—AND TEACHER TRAINING (ELEMENTARY, HIGH SCHOOL AND GRADUATE WORK)

CORAL GABLES, Fla. — Air conditioned classrooms are being used as a lure to attract students for its approaching summer session by the University of Miami.

Headline of an advertisement appearing recently in the New York *Times* said, "Obtain your degree in less time or added credits, through summer courses in air conditioned classrooms at the University of Miami."

Copy said, in part, "If you plan to enter college, it may come as good news to you to learn that by attending our summer school as well as the fall and spring semesters it is possible in many cases for you to secure a degree in three years instead of four."

Offers $30 A Ton for Old Air Conditioner

NEW YORK CITY—"We will allow you $30 per ton for your old package air conditioner," Wm. A. Schwarz & Son, Inc. offered in a recent advertisement appearing in the *New York Times*.

According to the ad, the offer applied to units of three to 30 tons regardless of age, make, or condition when used toward the purchase of a unit of similar horsepower or larger.

The York distributor addressed the advertisement to "businessmen" and labeled the offer a "Trade-O'Rama."

In another Trade-O'Rama advertisement, Schwarz offered $25 for old room air conditioners regardless of make, age, or condition and including removal and pick-up. The $25 would be applied toward the purchase of a new 1961 York room air conditioner.

Submitted to JIPC

11 Ways To Strengthen Mechanical Contractor

WASHINGTON, D. C.— Eleven recommendations aimed at "preventing encroachment of the general contractor in work areas properly the prerogative of the mechanical contractor" will be presented to the Joint Industry Program Committee at its meeting here on April 18.

(The term "general contractor" as used here apparently refers to a building contractor who attempts to do an entire project with general labor rather than using subs employing unionized mechanical trades labor.)

The recommendations were drawn up last month by a special subcommittee of the JIPC which met here to study the problem. They were listed as follows in a recent bulletin of the National Association of Plumbing Contractors:

Recommendations

"1. Call joint meetings of labor and management with top labor and management officials in attendance.

"2. Consider literature mailing programs to customers explaining benefits of the contract system.

"3. Strengthen building trades councils and invite management of large industries in the various building trades council areas to address the councils from time to time in order that they may become better acquainted and discuss mutual problems.

"4. Attempt to get over to customers the fact that they are not saving money on most of their jobs, even though non-union contractors talk in terms of saving millions.

"5. Have top labor people (organizers of various crafts) call on large industry from time to time, in order that the customer may have a better insight into the labor movement.

"6. Impress upon the United Association membership the need for eight hours work every day and impress upon management the need for adequate supervision which would have all tools and materials necessary to prevent lost time.

"7. Suggest to UA officials that they consider allowing contractors to bring in more United Association members who are in a supervisory capacity rather than using all local members in the same capacity.

Include Fringe Benefits

"8. Efforts should be made to amend the Davis-Bacon Act to include fringe benefits.

"9. Urge upon local unions and local contractor associations that both parties incorporate practical grievance machinery clauses in their agreements for the settlement of any disputes.

"10. Sell general contractors on the necessity of screening bidders and doing business with qualified subcontractors.

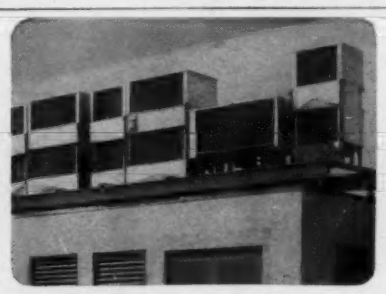
"11. Remind union contractors of their responsibility to industry and the harm being done by bidding joint ventures with non-union contractors."

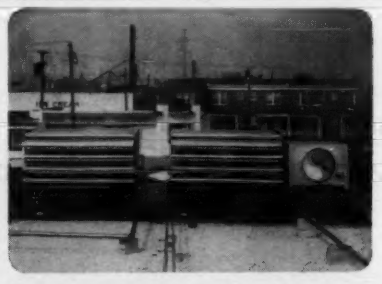
William T. Dodd, executive vice president of the UA, is chairman of the JIPC subcommittee which made the recommendations.

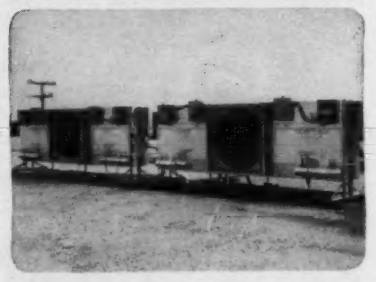
Other members are G. Allen Briggs, vice president, NAPC; E. Michael Pease, chairman of the Labor Committee, Pipe Fabrication Institute; and Joseph S. Kearney, president, Mechanical Contractors Association of America. NAPC Executive Secretary Jerome O. Hendrickson is secretary of the subcommittee.

throw your compressor out!*

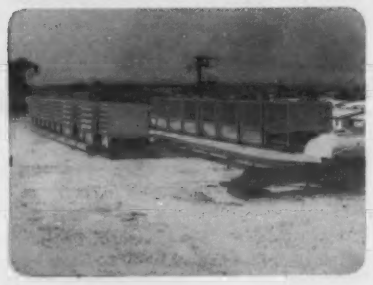
*outside that is!

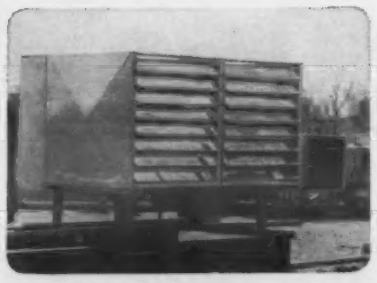






STOP wasting costly building space!





USE KRAMER

OUTDOOR CONDENSING UNITS

FOR AIR CONDITIONING—COMMERCIAL, INDUSTRIAL & SUPERMARKET REFRIGERATION

Kramer's Outdoor Condensing Units will operate outside without any additional protection or adjustment under all temperatures and weather conditions. They can be used for any application —air conditioning, commercial refrigeration, supermarket application, or industrial refrigeration.

Completely assembled, wired, tested and factory run-in, the units arrive on the job ready to operate. Simple hookup eliminates costly installation and control adjustment time. Kramer's Outdoor Condensing Units end waste of valuable indoor space.

WRITE FOR BULLETIN

KRAMER TRENTON CO., Trenton 5, N. J.

47 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

FREE

SPECIAL OFFER FROM

UCON IKE:

THE SHIRT OFF HIS BACK

For buying Ucon® Refrigerants in 125-lb. and 145-lb. cylinders

With the big season coming up, now's the time to stock up on refrigerants . . . and buying 125-lb. and 145-lb. cylinders of Ucon Refrigerants is the smart, convenient way to do it. This larger size cylinder offers you economy and storage convenience . . . and to encourage you to prove it to *yourself,* Ucon Ike is pleased to make this stupendous offer:

For a limited time only—April 1st through 30th—yours FREE with the purchase of two 125-lb. or 145-lb. cylinders of Ucon Refrigerants: A Gen-u-wine Ucon Ike Sport Shirt

A handsome yellow checked, short sleeved "Van Heusen" sport shirt in comfortable cotton—the kind Ike wears on his vacation. Ideal for work, play, any day—from Northland to backyard hammock.

To get your shirt: Under the brass dust cap on the valve of every 145-lb. cylinder of Ucon Refrigerants (125-lb. cylinders of Ucon Refrigerant 22, too), you'll find a Ucon Ike Seal. Simply mail two of these seals, together with your name, and the name of your wholesaler on your company letterhead to: Ucon Ike, P.O. Box 1010, Grand Central Station, New York 17, N. Y. Applications must be postmarked no later than April 30th, and no earlier than April 1, 1961. And don't forget to include your shirt size! (Small, Medium, Large or Extra-Large.) While you're at it, any comments you'd care to include on the Ucon Refrigerants line will be most welcome. As soon as we hear from you, your Ucon Ike Sport Shirt will be rushed on its way.

*Remember—this offer is good from April 1st through April 30th only!

For Economy & Convenience plus The Shirt Off Ucon Ike's Back—FREE
Specify 145-lb. Cylinders of Ucon® Refrigerants

a UNION CARBIDE product — Ucon® refrigerants — exclusive sales agent ANSUL

Ucon Refrigerants are manufactured by
UNION CARBIDE CHEMICALS COMPANY — Division of Union Carbide Corporation
270 Park Avenue, New York 17, N. Y.

Exclusive Sales Agents to Air Conditioning and Refrigeration Wholesalers
ANSUL CHEMICAL COMPANY, Marinette, Wisconsin

Ucon is a registered trade mark of Union Carbide Corporation

Sorenson Is McQuay Field Sales Mgr.

MINNEAPOLIS—Richard E. Sorenson has been appointed field sales manager for McQuay, Inc., it was announced by G. G. Workinger, vice president in charge of sales.

R. E. Sorenson

He will appoint additional sales representatives, coordinate the sales representative training program, and handle McQuay's relations with their representatives.

Sorenson joined McQuay in 1955 as product manager in the air conditioning department. In his new position, Sorenson will serve under Workinger for all marketing programming and distribution planning.

Floreth To Become York Sales Agent In Florida Area

YORK, Pa.—The resignation of John J. Floreth as vice president and manager of service for the York Div. of Borg-Warner Corp. has been announced by J. B. Elliott, president.

Elliott said Floreth would still be associated with York in the capacity of sales agent for the Florida area. He will open an office in the Fort Lauderdale vicinity under the name of J. J. Floreth & Associates, Inc.

Floreth said that in addition to carrying the full line of York equipment he plans to add three or four lines of supporting equipment in order to offer a complete service to architects, consulting engineers, and contractors.

Acme Appoints Peter Butterfield

JACKSON, Mich. — Peter Butterfield, Acme Industries' northern regional manager, has been recently appointed assistant field sales manager, according to D. G. Merrill, field sales manager. Butterfield joined Acme in 1953.

Butterfield

Mueller Climatrol Names 2

MILWAUKEE — Mueller Climatrol reported the appointment of Billie D. Phillips as a sales representative for Detroit and southwest suburbs, and Leonard R. Wren as sales representative for Washington and western Montana for the Alhambra, Calif. operation.

39th Oil Heat Convention Opens In New York City on April 23

NEW YORK CITY—The 39th annual convention of the Oil Heat Institute of America will take place at the Statler Hilton hotel here April 23-27.

One of the features of the meeting will be a Technical Div. symposium Tuesday morning, April 25. Two of the talks will be on "Burner Service Makes the Difference," by Frank Dunn, Atlantic Refining Co., and "Fuel Oil Specification Changes and Their Practical Meaning to the Manufacturers and Dealers," by Dick Wright, vice president, Iron Fireman Mfg. Co.

Wright will also speak at the first of two Distribution Div. dealer-distributor-jobber management clinics. His topic for this session, on Wednesday morning, is "The Oil Heating Industry Faces Up to Electric Heating As a Competitor."

Some of the other talks at this session will be on developing the fully-integrated business, "Management Attitudes Will Double the Volume of Your Service Income and Service Contracts," and "How the Pacific Northwest Builder Subsidy Program Works."

Among subjects to be discussed at the second clinic on Thursday morning, April 27, are "Future Technical Problems Facing the Dealer, Distributor, and Jobber," by M. J. Reed, Mobil Oil Co., New York City, and "The New Low Temperature Vent for Oil Burners and What It Means to Your Equipment Business," by Chet Blome, assistant to the president, Metalbestos Div., William Wallace Co.

•

National Oil Heat Association Lists Appointments

NEW YORK CITY—Glenn L. Werly, president of the new national oil heat association—the National Oil Heat Institute—announced that the initial organizational plan would start with these appointments:

Charles H. Burkhardt as managing director of the Marketing-Distribution & Equipment-Technical Div., as well as vice president; Frederick S. Burroughs as managing director of the Promotion-Communications Div., as well as secretary; and Ralph Hartell, communications director for all divisions.

Burkhardt was managing director of the Oil Heat Institute of America, Burroughs, secretary, and Hartell, communications director of the National Fuel Oil Council.

The two organizations are now merged into one instrument to develop increased positive programs for all segments of the industry, it was stated. Additional staff and final structure of the National Oil Fuel Institute, Werly said, are being advanced as rapidly as possible.

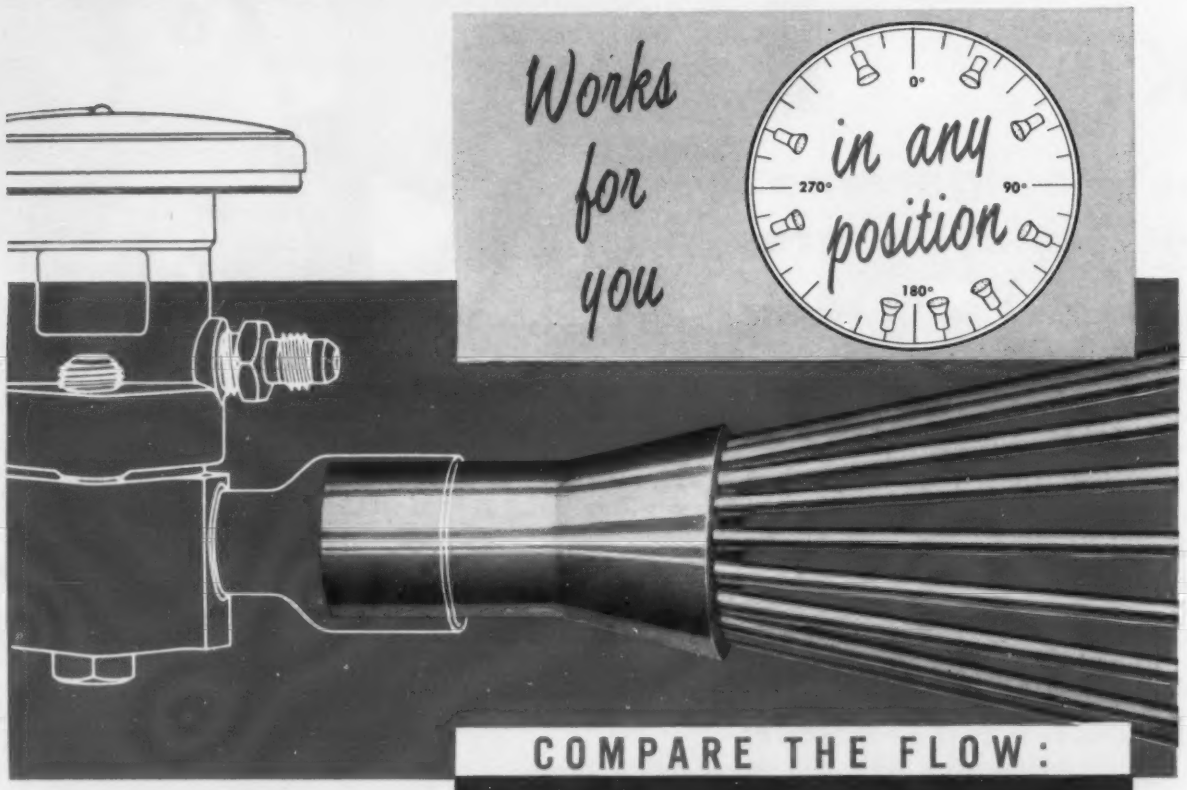
Changes in the best interest of the industry will be made where called for, Werly said. The new organization will, within the next few months, be housed under "one roof" in a single modern office in midtown Manhattan, he added.

The new organization, according to Werly, envisions the continuation and expansion of all constructive and effective activities of both OHI and NFC. The consolidation should not affect local operation of the affiliated field associations. These, in both merged bodies, have been largely autonomous.

Werly pointed out that the by-laws of the new organization included provision for a research division with a view toward bringing in the API oil burner research program somewhat later on.

CHECK THE ADVANTAGES...THEN SPECIFY • INSTALL

ALCO'S NEW VENTURI-FLO® DISTRIBUTOR



Assures equal distribution to all passes of a multi-circuit evaporator with a low pressure drop.

WIDE APPLICATION RANGE—from 25% to 150% of Rated Capacity.

LOW PRESSURE DROP—permits closer, more economical Thermo® Valve sizing—assures more stable valve control.

ONE PIECE CONSTRUCTION—nothing to come apart, nothing to take apart—*No orifices, plates or nozzles needed* for capacity regulation.

COMPARE THE FLOW:

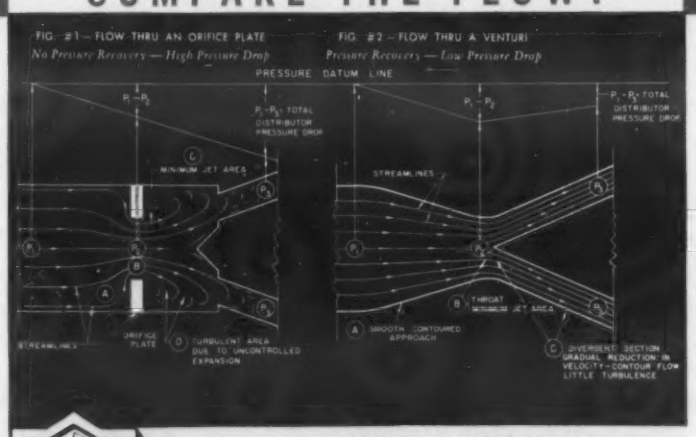


FIG. #1 — FLOW THRU AN ORIFICE PLATE
No Pressure Recovery — High Pressure Drop
FIG. #2 — FLOW THRU A VENTURI
Pressure Recovery — Low Pressure Drop
PRESSURE DATUM LINE
STREAMLINES
ORIFICE PLATE
TURBULENT AREA DUE TO UNCONTROLLED EXPANSION
THROAT
SMOOTH CONTOURED APPROACH
DIVERGENT SECTION GRADUAL REDUCTION IN VELOCITY—CONTOUR FLOW LITTLE TURBULENCE

Call your Alco wholesaler—
write for Specifications Bulletin No. 188.57.

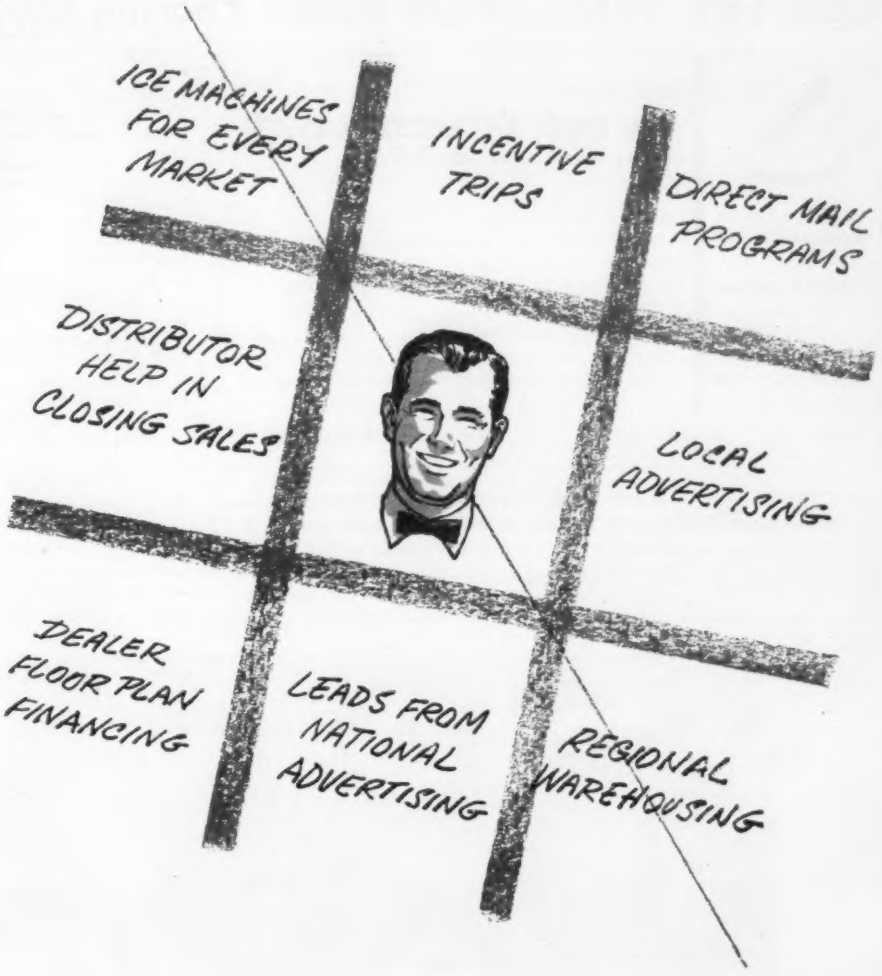
• *BUY SECURITY*
• *BUY QUALITY*
• *BUY ALCO*

ALCO VALVE CO.
8553 KINGSLAND AVE. • ST. LOUIS 5, MO.

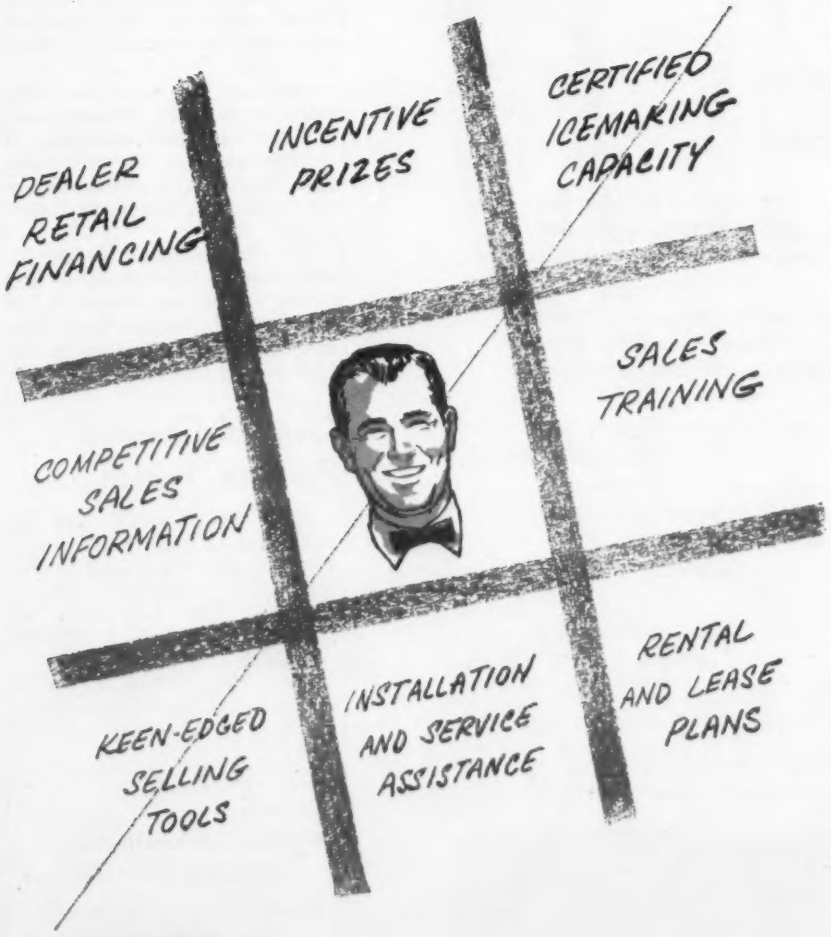
8219

The one complete line of refrigerant controls: Thermostatic Expansion Valves • Refrigerant Distributors Solenoid Valves • Suction Line Regulators • Flooded Evaporator Controls and Reversing Valves

NO MATTER HOW YOU PLAY THE GAME



YOUR Carrier ICE MACHINE DISTRIBUTOR HAS ALL THESE SELLING SERVICES LINED UP FOR YOU!



The top ice machine product and the top ice machine program—that's the winning lineup your Carrier Distributor has waiting for you. Make him prove it! He's listed in the Yellow Pages under "Ice Making Equipment." Or fill out and mail the coupon below right now!

CARRIER AIR CONDITIONING COMPANY
Syracuse 1, New York

I'd like to hear more about Carrier's winning lineup of ice machine products and services.

Name_____

Company_____

Address_____

City_____ State_____

Carrier *Air Conditioning Company*

Card Tells What To Do Before Phoning for Service

To enjoy your
"YEAR-ROUND" AIR CONDITIONING SYSTEM
please follow these instructions:

SUMMER COOLING	Fan switch set on "FAN" Cool switch set on "COOL"
WINTER HEATING	Fan switch set on "AUTO" Heat switch set on "HEAT"
FILTERS	Replace every six to eight weeks
THERMOSTAT DIAL	Set dial at desired temperature (Recommended 72 degrees)

(Please read back of card)

Thank you... JONES-WOOD AIR CONDITIONING • Midway 9-9360

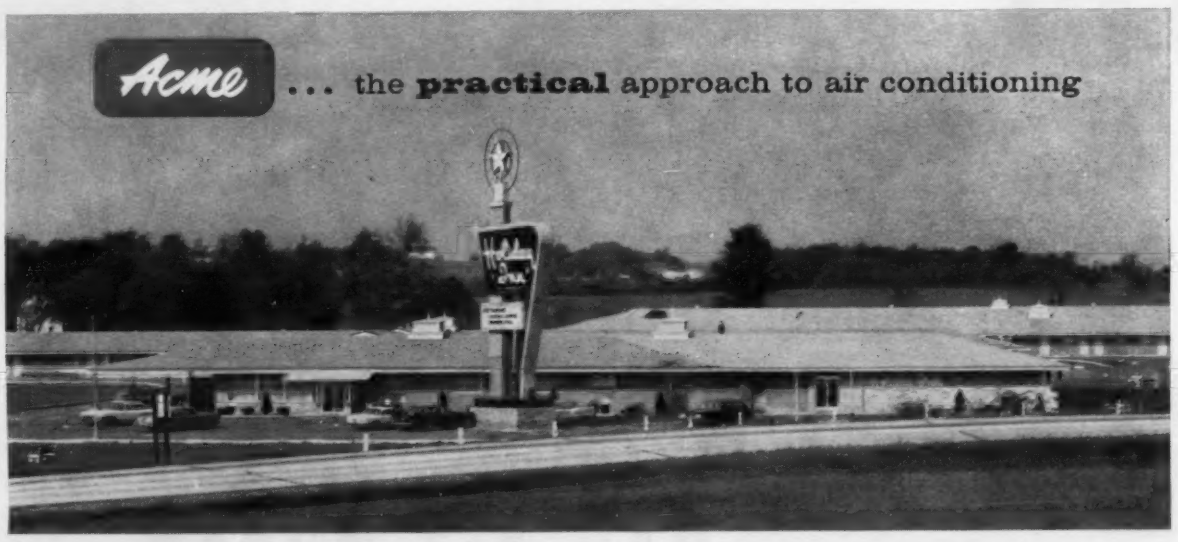
CHECK LIST for air conditioner owner to follow before telephoning for service is provided to each customer by Jones-Wood Air Conditioning, Carrier dealer in Philadelphia. The list (right) is printed on the reverse of a card containing operating instructions for the system.

Be sure to check the following points before calling our Service Department.

1. Has the thermostat been set and kept at the recommended setting for this application?
2. Has direct summer sunlight been kept out by means of shades, blinds, or awnings?
3. Have windows and doors been kept closed except for the passage of people?
4. Have you had abnormally large groups of people on hot days?
5. Have you checked your filter to see if it was clogged with dirt?
6. Have you had above-normal use of appliances, etc. in hot weather?
7. Are you sure the unit has been turned on, switched to heating or cooling?
8. Are you sure your winter fuel supply is all right?

ELMER RAVE, Penn Controls district manager, illustrates the split differential adjustment to members of the Columbus, Ohio chapter of Refrigeration Service Engineers Society.

COMPLETE lack of boredom is evident at this Dayton, Ohio RSES meeting that brought out 54 members.



"We wouldn't hesitate to recommend Acme"

The 172-unit Holiday Inn of Allentown, largest motel in eastern Pennsylvania, has just completed its third addition in a little over two years and another new section is already being contemplated. Comfort conditioning for the entire installation is 100% Acme!

According to Inn manager John G. Lord, "Acme was specified by our architects and engineers because of the excellent, trouble-free service Acme equipment is known to give. From our experience, *we wouldn't hesitate to recommend Acme-system air conditioning regardless of the demands required.*"

Contractors . . . Lehigh Engineering Company, Bethlehem, Pa. And the owners, H. Ted Lyons and G. W. Hersh, Jr., agree . . . "Acme was selected as the most economical and efficient to both heat and cool the entire project. We're proud and pleased with the operation of all the Acme equipment installed. Maintenance and service calls have been at a minimum and our customer has never had anything but praise for the job."

You are invited to try "the excellent trouble-free service of Acme equipment" for yourself. Your satisfaction is guaranteed.

Acme INDUSTRIES, INC.
JACKSON, MICHIGAN • GREENVILLE, ALABAMA
MANUFACTURERS OF QUALITY AIR CONDITIONING AND REFRIGERATION EQUIPMENT SINCE 1919

Hands Are Busy At Penn Meetings

COLUMBUS, Ohio — Extending the do-it-yourself concept to educational meetings, Penn Controls, Inc., is making it possible for servicemen attending training meetings to work with their hands, instead of listening only to a speaker.

Operating around the country with two kits, Penn makes use of a portable air compressor connected to 24 gauge stations equipped with supply and bleed valves, according to Penn's Ivan C. Stepnich.

"One or two men working at each station then have the means to set, cycle, adjust, analyze, and calibrate refrigeration and air conditioning pressure and temperature controls under conditions that precisely simulate field operation," Stepnich says.

Although the company provides its own 4P1 pressure control for the demonstration, it emphasizes that the principles and adjustments discussed are applicable to competitive controls.

"One thing these do-it-yourself sessions have demonstrated to us," concludes Stepnich, "in spite of all that has been said, apathy toward education is not inherent in our industry."

General Chemical Promotes Patton

NEW YORK CITY—The appointment of Actor H. Patton as director of product development for Allied Chemical's General Chemical Div. has been announced by Frank J. French, president.

With the division 32 years, Patton has been manager of product development for the past 11.

Thinking of—
- **changing territories**
- **expanding your territory**
- **taking on new lines—**

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CLASSIFIED ADS
Your opportunity may be there.

Home Size Furnace-Air Conditioner Unit Mounts on Roof or Outdoor Slab

LA PUENTE, Calif.—A new year-round air conditioner that combines an air-cooled air conditioner with a full-size gas furnace in a single compact casing for outside installation has been introduced by the Payne Co. here.

Called the "Econoair," it measures approximately 2 by 3 by 4 ft and may be mounted either on a ground level slab or on the roof.

At present, the unit is offered in two sizes with a third to follow shortly, the company said. The two models available now are the 24/55 with 2 tons' cooling capacity and 55,000 Btu heating capacity and the 36/80 with 3 tons' cooling capacity and 80,000 Btu heating capacity. The third model will be the 36/100.

The units, designed for either commercial or residential use, include the complete heating and cooling system, so that only ductwork and thermostatic connections are inside the building. Gas and electrical connections are made to the unit outside.

Patents are pending on a number of features of the unit, the manufacturer pointed out.

PAYNE ECONOAIR shown in a typical roof-mounted application. It can also be mounted on a slab with ducts in a crawlspace or basement or with risers to an attic system.

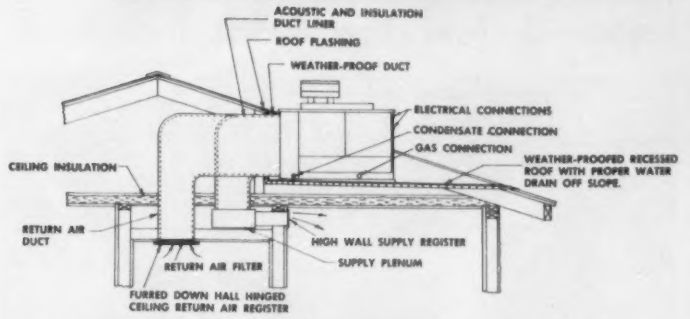
He sees the unit providing several advantages to the home builder. By putting the entire heating and cooling plant outdoors, it provides more space for other purposes inside the house. Having the compressor and blower outside the house provides for quieter operation. Heating capacity is ample for the whole house with normal heat loss reduction measures, he says.

For the remodeling or modernization contractor, it offers an economical means of providing both air conditioning and heating where simple add-on air conditioning is not practical.

The manufacturer points out that the Econoair can usually be installed on the roof without imposing unusual load factors. Recommended support is a simple angle iron frame constructed according to the slope of the roof.

Through-the-roof connections to delivery and return air ducts, electrical and gas connections, and proper flashing will complete the job.

Expansion of the Econoair to a full range of sizes is contemplated by the Payne Co.



ELEVATION and plan view of recessed or dormer rooftop installation.

ASHRAE Meets In Denver June 26-28

DENVER—The 68th annual meeting of the American Society of Heating, Refrigerating & Air-Conditioning Engineers will be held June 26-28 at the Denver Hilton hotel here.

The program features a series of three technical sessions, four symposiums, forums, and committee meetings.

Among the 15 papers to be presented at the technical sessions will be those on steam vacuum refrigeration; heat and mass transfer in dehumidifying coils; fluid flow through flexible orifices; degradation of mylar film exposed to water and alcohol; refrigerating capacity and performance data for various refrigerants, azeotropes, and mixtures; graphical solution for flows in hydraulic circuits; solar heat gains through domed skylights; evaluation procedure for odor-control methods; and infiltration through revolving doors.

The symposiums will cover industrial ventilation, food refrigeration, air conditioning, and domestic refrigerator engineering.

Victor J. Johnson of the National Bureau of Standards, Boulder, Colo., and a member of ASHRAE's Rocky Mountain Chapter, is general chairman of the Host Committee, assisted by chapter members, ASHRAE officers and staff.

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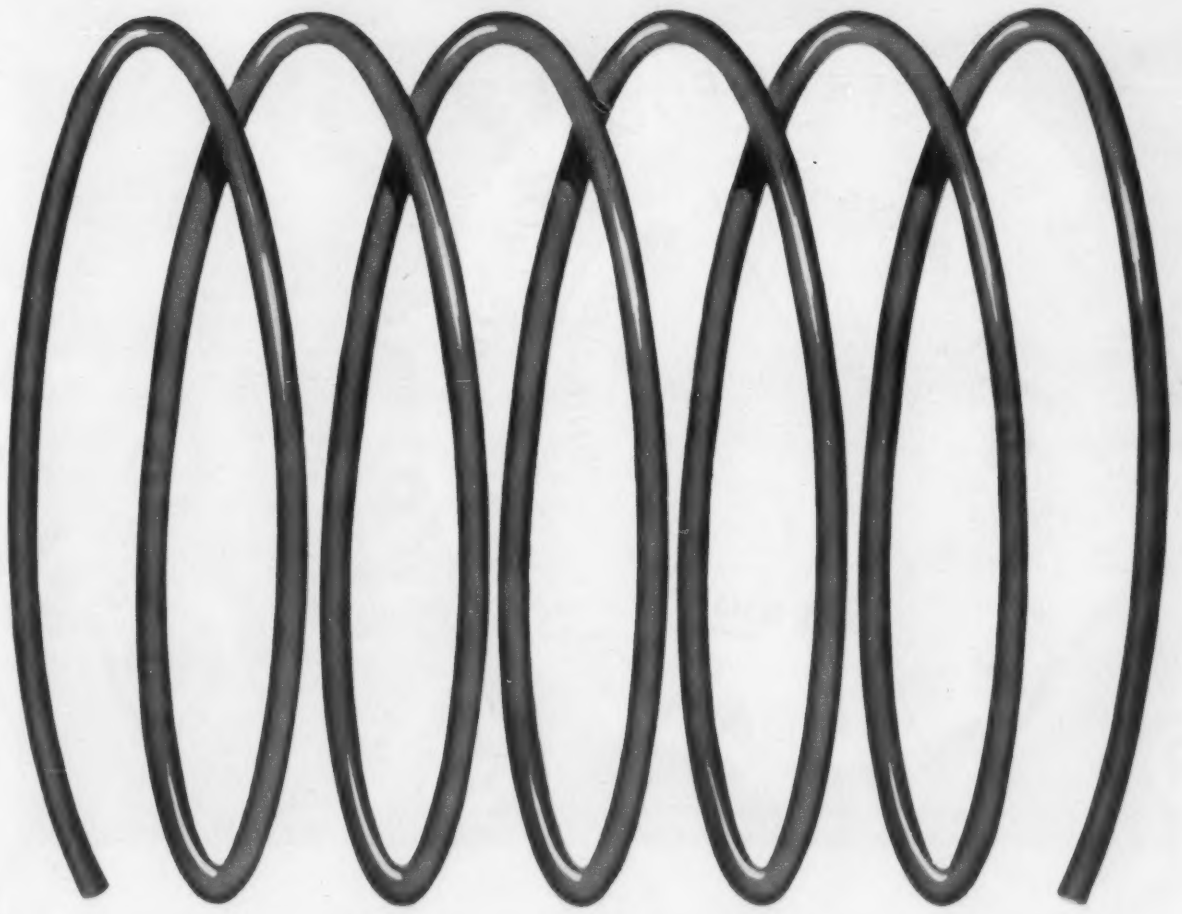

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GENERAL MOTORS

STEEL TUBING BY ROCHESTER PRODUCTS

ROCHESTER PRODUCTS DIVISION OF GENERAL MOTORS. ROCHESTER. NEW YORK

Fraser & Johnston Adds Industrial, Commercial Units

CLOSE LOOK at Fraser & Johnston's new air conditioning units including six commercial heat pumps was given these national sales representatives at the F&J plant in San Francisco. Clockwise from l. to r. are: Tom Davenport, F&J sales engineer; John Well, Portland, Ore.; Harvey Culley, Louisville; George Zingsheim, Minneapolis; Paul Bolinger and George Bolinger, Fort Worth; G. H. Cardiff, F&J chief engineer; George Moore, F&J assistant sales manager; Lee Dewhirst, Wichita, Kan.; Bill Richerson, Oklahoma City; Gibson McKenzie, Birmingham, Ala.; E. A. Easton, F&J general sales manager; and W. H. Johnston, F&J president.

* * *

SAN FRANCISCO — Five years ago, Fraser & Johnston Co. expanded from gas-fired residential furnaces to residential cooling and established its own refrigeration plant for building F&J coils and components for evaporators and condensing units, according to the company.

Today, a second major expansion, into industrial and commercial heating and cooling, is under way.

Major innovations of this expansion are self-contained air conditioning units, and self-contained heat pumps of six sizes ranging from 3 to 15 tons' capacity. Both types have low silhouettes suitable for roof mounting.

These units are used in multiples to handle cooling loads of over 100 tons and feature large coil areas and high air volume for efficiency even at extreme temperature conditions, it is reported.

Cooling coils and remote condensing units manufactured by F&J are also available.

River Towboat Air Conditioned, Heated by Dunham-Bush System

PILOT CONTROL room of the river towboat *Patrick Calhoun, Jr.,* is heated and cooled by a Dunham-Bush 'CRV' console unit featuring individual room control. It is one of many featuring individual room control installed throughout the towboat.

* * *

JEFFERSONVILLE, Ind. — Times have changed since Mark Twain's day aboard a river towboat like the *Patrick Calhoun, Jr.,* recently delivered to the American Commercial Barge Line by Jefferson Boat & Machine Co. here.

This powerful new boat is comfort conditioned throughout, and the most practical possible use has been made of modern air conditioning products.

Installed in the crew's quarters, guest rooms, officers' quarters, pilot house, mess hall, and engine control room, for example, are Dunham-Bush "CR" console type room conditioners. These units handle both cooling and heating needs and feature individual room control.

A remotely located Heat-X package chiller furnishes the chilled water which circulates through the units when cooling is required, and the same piping system is utilized to deliver steam when heating is needed.

Serving the heating requirements of engine rooms, machine rooms, work shops, and other miscellaneous areas are Dunham-Bush unit heaters.

NWAHACA Winds Up Short Courses for '61

CLEVELAND—With the conclusion of the warm air heating and air conditioning short course held at the University of Connecticut April 10-13, National Warm Air Heating & Air Conditioning Association brings to a close its short course program for 1961.

NWAHACA said nearly 80 men from seven states attended the warm air heating and air conditioning short course at North Carolina State college, held in Raleigh, N. C., March 6-9, according to the National Warm Air Heating & Conditioning Association.

This was the fifth consecutive year for the North Carolina State short course, and attendance has increased about 15% every year. Most of the "students" were sent by dealer-contractors, but a major increase in utility representatives also was noted.

The Oklahoma State university short course, held at Stillwater, Okla., Feb. 6-9, was also well attended, with 57 men on hand. Particular interest at this short course centered in a session on dealer-contractor management in which NWAHACA's "Management Reference Guide for Dealer-Contractors" was used as the text.

Thank you, 74%

Good news! When we surveyed air-conditioning dealers in 21 cities last summer, we found that 74% knew of our Certification program. More important: 6 out of 10 familiar with the program *use it in their selling.*

Thus, in less than two years, air-conditioning dealers have demonstrated their enthusiasm for ARI certification. Many have thought up ingenious ways to sell with the program—and we're delighted.

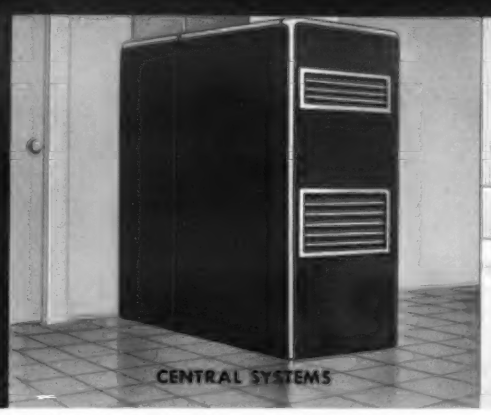
But we won't rest on our laurels. Dealers kept telling us they'd like a sales piece that would explain the ARI Certification program to their customers, so we designed "How to Buy Central Air-Conditioning." It tells consumers the whys and hows of air conditioning, outlines the Certification program, suggests why air conditioning should not be bought on the basis of price alone. For a sample copy, write (on your letterhead, please) ARI.

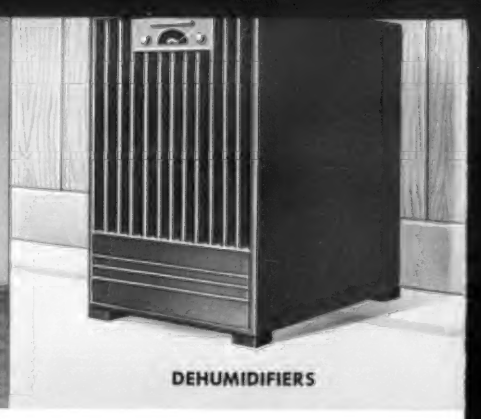
AIR CONDITIONING AND REFRIGERATION INSTITUTE

Dept. A-412, 1346 Connecticut Ave., N.W., Washington, D. C.

BIG FAMILY OF SIZES. Bendix-Westinghouse compressors and condensing units come in a wide variety of sizes and capacities—ranging from ⅛ hp all the way up to 4 hp. So, no matter what the needs of your refrigeration or air conditioning equipment, you'll find one of our units will fill the bill exactly. You'll also find it delivers greater efficiency in less space and at lower cost. To find out more, turn the page.

Bendix-Westinghouse MOTOR COMPRESSORS





BENDIX-WESTINGHOUSE COMPRESSOR LINE COVERS EVERY RESIDENTIAL AIR CONDITIONING NEED

MOTOR COMPRESSORS FOR RESIDENTIAL AIR CONDITIONING

Model	HP	Capacity*
DEHUMIDIFIERS		
CH 20 V-1	⅓	1,800
YCH 25 V-1	¼	3,400
ROOM UNITS		
YCH 137 VA-1	¾	6,100
YCH 161 VA-1	1	7,050
YCH 176 VA-1	1	8,500
YCH 213 VA-1	1	10,000
YCH 213 VA-2	1	10,000
YCH 232 VA-1	1	11,000
YCH 250 VA-2	1	12,000
CH 286 TA-2	1	12,800
YCH 310 VA-2	1½	14,500
CH 325 TA-2	1½	14,400
CH 350 TA-2	1½	15,300
CH 383 TA-2	1½	17,800
CH 400 TA-2	2	18,400
CH 420 TA-2	2	19,500
CH 455 TA-2	2	21,600
CH 490 TA-2	2	24,400
CENTRAL SYSTEMS		
CH 490 TA-2**	2	24,400
YCH 700 TA-2**	2½	30,500
YCH 830 TA-2**	3	36,500
YH 932 TA-2	3½	42,200
YH 1020 TA-2	4	47,500

Y in the model number denotes 2-pole; all others are 4-pole

*Based on: 45°F. Evaporator temperature
130°F. Condensing temperature
95°F. Return gas temperature entering compressor
15°F. Liquid subcooling
95°F. Ambient

**Available PSC/CSR. All central system compressors available single or three phase

Here—in the modern Bendix-Westinghouse 1/5 to 4 h.p. compressor line—residential air conditioning manufacturers are finding the best answers to their compressor needs for room units, central systems, and dehumidifiers.

Featured are such outstanding *built-in* values as: unusually quiet operation for maximum user satisfaction . . . overload protection for most efficient performance in all operating ranges . . . latest-type motor insulation for maximum safety . . . and full suction gas cooling and positive pressure lubrication for utmost dependability.

Other *plus* advantages that are yours with Bendix-Westinghouse include: reduced size that takes less installation space, lighter weight that cuts shipping expense, and lower price that reduces production costs.

No other compressor line offers you so many *extra* values. Ask for prices and detailed specifications.

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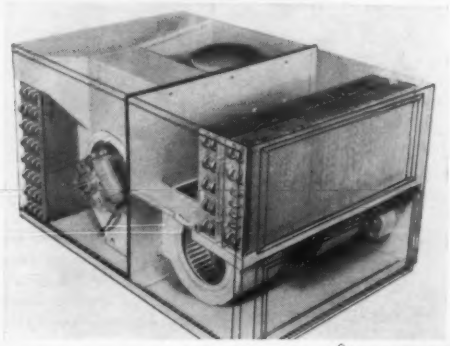
Export Sales: Bendix International, 205 E. 42nd St., New York 17, N. Y.; Peter A. Karl, Inc., Union Station Bldg., Utica 2, N. Y.; Sabal-Kielmann, Inc., 15 William St., New York 5, N. Y.

Fedders Central Conditioner Said To Be Convertible for Remote Use



FEDDERS 2-hp "Adaptomatic" central air conditioner.

* * *

5-Hp 'Adaptomatic V' Available In 4 Models

MASPETH, N. Y. — Fedders Corp. has announced details on its "Adaptomatic V," a unitary central air conditioner which is readily convertible for remote installations.

"The new and extensive application potential of the Adaptomatic V is made possible by a unique split chassis design, with the compressor-condenser section separated by a bulkhead from the evaporator section," the company said.

"Thus, the Adaptomatic V may be easily installed in one piece or, equipped with four cut-off service valves, as a practical remote system without all the work involved in a conventional remote installation."

The new 5-hp Adaptomatic V is available in four models, two with heat pumps and optional supplementary resistance heating. The Adaptomatic chassis construction permits better remote heat pump applications, a Fedders official stated.

"For a unit of this large capacity, 60,000 Btu, the Adaptomatic V is extremely compact, permitting a wide range of applications, from large homes and business establishments to multi-story offices and stores to bowling alleys and supermarkets," the company said.

The Adaptomatic V is factory-charged and wired and is shipped as a single, complete package.

Another addition to the Adaptomatic central air conditioner family is a 2-hp "Universal" model which features a unique drawer-type chassis and open-end sleeve cabinet, it was also announced.

"This new design makes through - the - wall installation simple and affords easy maintenance from indoors or outdoors, without disturbing any ductwork," Fedders said. "This unit, extremely compact in size, is easily installed in any conceivable location, even in a closet top plenum application."

The unit is said to be suitable for small homes, individual apartments, and retail stores.

The new Universal models retain the Adaptomatic features of factory-assembly, factory-wiring, factory-charging, and factory-testing, the company added. Wall-mounted thermostates, centrifugal blowers, pressurized condenser system and zinc clad cabinet approved for outdoor installation are standard equipment.

New Advertising, Marketing Agency To Concentrate on Heating, Cooling

CLEVELAND—An advertising, marketing, and promotion agency has been formed to specialize nationally in heating, plumbing, air conditioning, and refrigeration accounts.

Fortune Advertising Agency of 1514 Prospect Ave., Cleveland, (telephone, TRinity 1-7524), is a partnership with Dick Gang, Jack Green, and John Thibo, all formerly with Viking Air Products, as the principals.

"We feel a planned 12-month-a-year advertising program designed to sell merchandise is an absolute necessity if a business is to grow profitably," Gang said. "In a close margin industry all dollars must be invested to help increase sales and our thinking and agency philosophy is based on creating programs designed to consistently increase sales."

The agency said it is now working with these wholesalers:

Jack Allen of Allen Heating Supply, Inc., Buffalo; George Egan of Belco Distributors, Inc., Somerville, Mass.; Joe David of Lewie David Co., Decatur & Sullivan, Ill.; Paul Fleck of Fleck Bros. Co., Camden, N. J.; "Shel" Gardner of Sondik & Co., Hartford, Conn.; Paul Nelkin & Ellis Stearman of American Supply Co., Inc., New Haven, Conn.; Bill Schoedinger of F. O. Schoedinger, Inc., Columbus, Ohio; and Dick Young of Young Heating Supply, Inc., South Bend, Ind.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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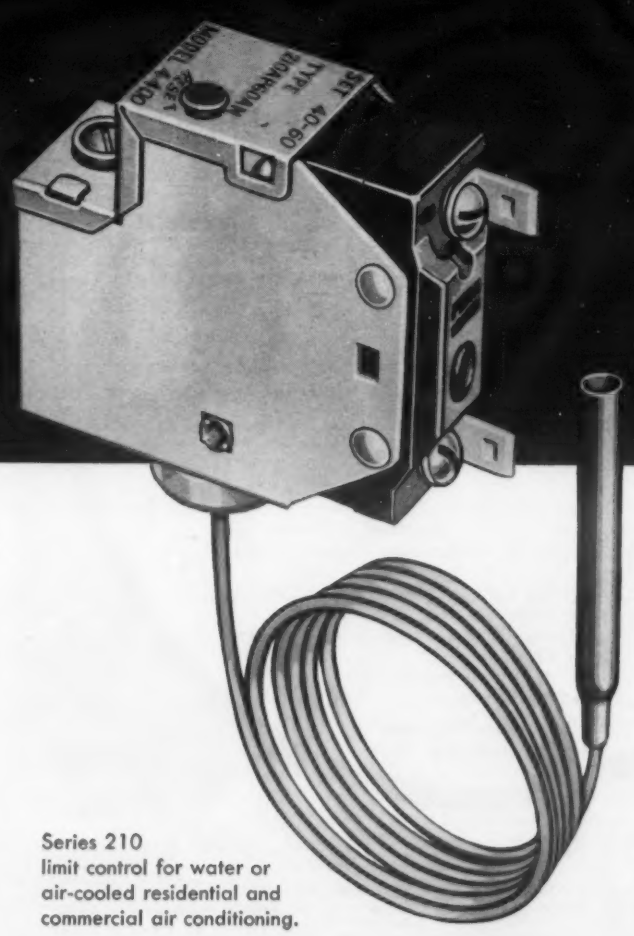
your wholesaler has limit controls for replacement on all packaged air conditioning



Series 210
limit control for water or air-cooled residential and commercial air conditioning.

Penn universal replacements help you give immediate service

Now . . . Penn's Series 210 limit control, widely-used by manufacturers of packaged residential and commercial air conditioning, *is available for field replacement.* And, with its adjustable pressure range, it will fit the specifications of any air conditioner manufacturer.

No more waiting . . . no more disgruntled customers . . . simply go to your wholesaler and get immediately the correct replacement for the high or low limit control. Your wholesaler has a handy Penn cross-reference chart which makes proper selection fast and easy.

Remember, to give your customers prompt service . . . go to your wholesaler and ask for the Penn Series 210 limit control.

PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N.Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Rochester Utility Modernizes for 1970

MODERNIZATION program in progress at Rochester Gas & Electric Corp. Construction view shows lamping and varying depth of cavity above luminous ceiling which will hide pipes, conduit, and ducts for lighting, heating, and air conditioning.

Integrates Heating, Cooling, Lighting In 10-Story Building

ROCHESTER, N. Y.—A modernization program is under way at the Rochester Gas & Electric Corp.'s headquarters building here which is expected to keep it modern and "up-to-date" even into the 1970's.

Chief feature of the program involves integration of the building's lighting, heating, and air conditioning, a concept developed recently by General Electric illuminating engineers.

When completed the building will have:

1. Air conditioning on the second through tenth floors, instead of just on the street-level;
2. Much of the structure's heating requirements supplied by the lighting system; and
3. Lighting levels at 200 foot-candles, about four times higher than at present.

Renovation of three floors of the 10-story, 35-year-old building has been completed, and the others are expected to have received the improvements within the next 12 months.

Total cost of modernizing the lighting, heating, and air conditioning systems in the 150,000-sq ft structure will be approximately $1.5 million. This involves $600,000, or $4 per square foot, for the lighting, and $900,000, or $6 per square foot, for the air conditioning and heating.

TROFFER lighting takes care of lower ceiling heights in passageways between office areas. Lighting levels have been increased to 200 foot-candles, four times the previous level. Brightness on walls gives a sense of cheerful openness.

Said Leo H. East, R.G.&E. executive vice president: "We intend to use our renovated building as a demonstration area to show potential customers the attractiveness, low cost, and practical benefits of a modern, integrated lighting, heating, and air conditioning system."

Preliminary plans for the lighting called for a system which would consume five watts per square foot. This was approximately the amount of power required for the old incandescent system. Lighting levels were to be about 100 foot-candles.

Before final plans were developed, however, the new I.E.S. minimum recommended foot-candle levels for office lighting were published. With 100 foot-candles barely the minimum recommended by I.E.S. for general office work, and 200 for drafting, R.G.&E. decided to strive for 200 foot-candles maintained throughout the building.

Going to 200 foot-candles cost much less than expected, and "nowhere near" double the cost of installing a 100 foot-candle system, it was stated.

Because of the availability of ample steam capacity, and freedom from noise and vibration, R.G.&E. decided to use an absorption - type refrigeration plant. It is located in the building's penthouse, thus resulting in minimum condenser - water

Modine Plans Plant In McHenry, Illinois

McHENRY, Ill.—Modine Mfg. Co. has announced plans to build a production plant here.

According to A. G. Dixon, president, while grading for a possible eventual building of 170,000 sq ft has been done, initial factory unit will be about 30,000 sq ft in area.

"Subsequent expansions may be added based primarily on the success of our initial operations," Dixon said. He noted that the expansion was part of a growth pattern for Modine designed to enable the company to participate more favorably in an increasingly competitive market.

The single-story, curtain-wall construction building is expected to be ready for occupancy during the coming fall, with employment at the outset in the 75 to 125 range.

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COMPLETELY INTEGRATED QUALITY CONTROL, FROM OUR OWN REFINERY TO OUR OWN DISTRIBUTION DEPOTS

Air Conditioning Data for Rochester G & E

Installed Capacity—760 Tons
Manufacturer and Type—York Absorption
Primary Water Temperature—42°F (To Fan-Coil Units)
Secondary Water Temperature—52°F (To Induction Units)
Fan Systems—Tenth Floor—Single duct, HW reheat coils; 10,000 cfm Clarage unit 11th Floor Penthouse
Perimeter System—High Velocity; York 3 Pipe
(2 thru 10) —Induction units, 30,000 cfm Clarage Fan 11th Floor Penthouse
Interior System—Medium Velocity—Double Duct
(2 thru 9) with Mixing Boxes—100,000 cfm Clarage Fan 8th Floor Penthouse
First Floor—Old Single Duct—now supplied with chilled water from new machines
Controls—Johnson Service Co.—Control Board in Basement
Filters—Electrostatic + dry type on new systems
Return Air Fans and Interlocked Dampers permit varying outside and exhaust air. Both high and low returns.
Cooling Towers—3 Marley (1 winterized) 87° off at 93°-78° WB
Outside Air Heating Coils—Glycol solution
Ceiling Diffusers—Anemostat
Electrical Load Before Remodeling—600 Kw
Estimated Electrical Load After Remodeling—2,200 Kw

and chilled-water piping and pumping costs, the utility said. The penthouse plant will serve the entire building.

The air conditioning and heating systems employ much of the same equipment. Under-window induction units with large coil capacity are served from a three-pipe system, which provides hot or chilled water as the temperature of the rooms require. Each room or area has automatic temperature control.

The lighting system produces sufficient heat in the wintertime to meet the building's requirements except in peripheral areas. Thus, supplementary heat is required under the windows.

To reduce excessive heat in internal areas, a high-pressure dual-duct air system is provided. This has individual mixing boxes for each office or zone, and diffusers located level with the bottom of the ceiling. High and low returns are used to take air back to the apparatus rooms. Return air can be reused or exhausted to the outside.

Recold Holds Seminar For Rapsco Personnel

SAN FRANCISCO—Managers and key refrigeration men of the nine wholesale stores of Refrigerating & Power Specialties Co. attended a two-day seminar in Los Angeles arranged by Walter L. Hilton, who is refrigeration sales manager of Recold Corp.

President Hy T. Jarvis of Recold announced at the conclusion of the seminar that Rapsco, including its California Refrigerator Co. and Acme Refrigeration Supply, is now the largest distributor of Recold products in the world.

In Oregon and Washington, Recold has been presented by Rapsco for eight years. In northern California they took on the Recold line a year ago when key personnel had a one-day product seminar at the factory.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Air Conditioning's Image

Dean Says Industry Must Decide What It Is, Then Project It

LOS ANGELES — The air conditioning industry should plan and project to 1970 the long range goal it needs to focus on, to attract new graduates, Dean of the Campus Harold P. Hayes said in his talk to the Southern California Chapter of the American Society of Heating, Refrigerating & Air-Conditioning Engineers.

The industry must decide what image it desires to project to the public, plan a program to project the image, and then live up to it, Dean Hayes asserted.

In building the desired image, he said, the questions to be considered in making this long range master plan are:

Where are the outstanding graduate schools?

Where are the non-profit foundations that can aid the program?

Is there public recognition of individuals' contributions to the industry?

ASK YOURSELF THESE QUESTIONS

Also he said the industry should ask itself:

Are the engineers vulnerable to disappearing jobs or can they adjust to new phases?

Is the industry planning ahead to grow and open new horizons that will create new jobs?

Is there professional recognition of accomplishment within the industry?

Is there excitement in working in the cooling industry?

Dean Hayes said a college can prepare students to satisfy the three drives of status, security, and satisfaction of a job well done. But any industry that wants to attract new graduates must be prepared to satisfy these drives.

In other words, the dean said, an industry in regard to personnel must have vision or vanish.

To illustrate the importance of the people who work within an industry, he quoted Andrew Carnegie:

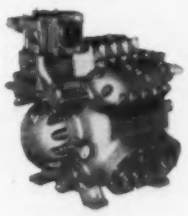
"Let floods or fire destroy my plant from the face of the earth, but if I retain my organization I will be whole again in six months."

EVERY B&G® COMPONENT IN THIS TYPICAL INSTALLATION IS ALIVE WITH STAR FEATURES

B&G CONDENSERS
Lighter, more compact units, featuring quiet, vibration-free operation, uniform gas distribution, cleanable tubes and higher operating efficiencies.

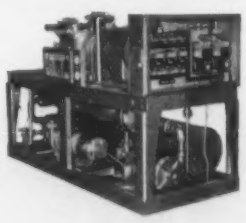
B&G EVAPORATORS
See illustration at right for features which give these units outstanding superiority.

B&G SUCTION LINE HEAT EXCHANGERS
Aid thermal expansion valve operation, prevent liquid slugging.

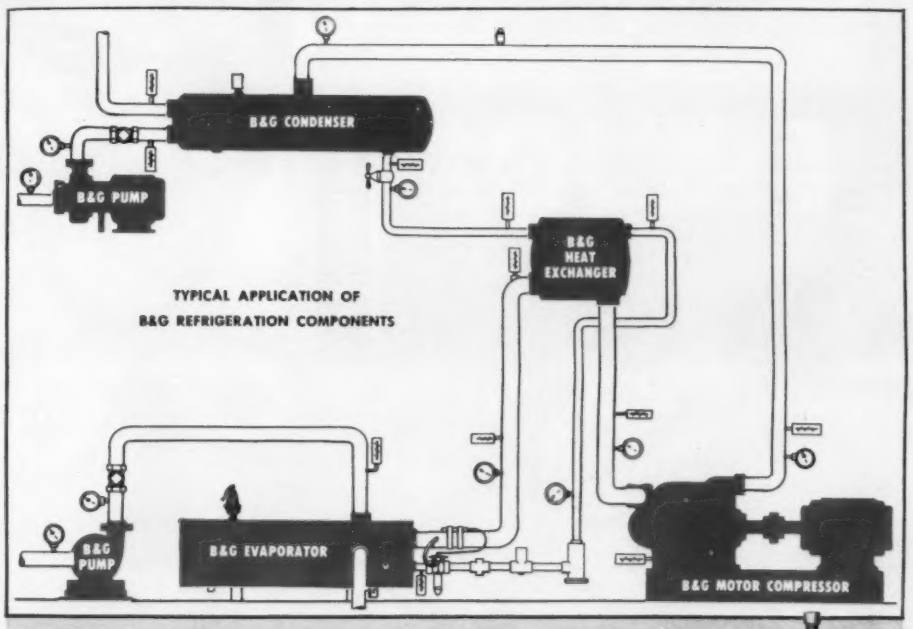


B&G COMPRESSORS
Precisely engineered for vibration-free operation with all the advantages of "open" units. All units have *one* bore—a few interchangeable parts service them all.

B&G CENTRIFUGAL PUMPS
A full range of *quiet* pumps for refrigeration and air conditioning systems.



B&G PACKAGE LIQUID COOLERS
A completely integrated and assembled water chiller—the only unit of its kind with all major parts designed, built and guaranteed by one manufacturer.



"REF" EVAPORATOR...Featuring non-slugging design...tube bundle proof against freeze-up damage...positive oil return.
SERRATED TUBE HOLES
Assure leak-free joints between tube sheet and tubes
SPECIAL DESIGN COPPER TUBING
Fluted tubing provides positive and permanent mechanical bond between tube and inner fin for all temperature variations—positive contact throughout 180° bend. Inner-fin tube triples refrigerant heat transfer surfaces. Centrifugal force created by the twisted spline holds liquid refrigerant against tube, minimizing slugging and pressure drop.

B&G makes a complete line of refrigeration and air conditioning components—*with many commonly used sizes available for immediate shipment from factory stock!*

These are quality units throughout! B&G Evaporators and Condensers all offer *plus values* in efficiency and rugged, long-life construction. They are manufactured by methods which hold shell diameters exact and free of distortion. This permits tight fitting baffles with minimum liquid slippage, greater efficiency and easy replacement of tube bundles if ever necessary.

All units are built to A.S.M.E. Code requirements and are so stamped.

When selecting pumps, B&G Series 1522, 1531 and 1510-B Centrifugal Pumps invite your most critical comparison. They are of vertical split case design, equipped with the exclusive, leak-proof "Remite®" Mechanical Seal and noted for quiet, dependable operation.

BELL & GOSSETT
COMPANY
Dept. GP2-47, Morton Grove, Illinois

Canadian Licensee: S. A. Armstrong, Ltd., 1400 O'Connor Drive, Toronto 16, Ontario

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1)

became President of the Inland Steel Co. Currently he alternates between two roving jobs:

Consultant to the Federal Government, and visiting professor at several Universities. Prof. Randall sadly revealed in a recent issue of the *New York Times Magazine:*

"Devoted to tolerance as a creed, professors can nevertheless be very intolerant themselves. They look down a bit on the presumably lesser minds with whom they are thrust in contact through alumni relationships.

"It is with difficulty that they conceal their innermost thought, which is that there are no really first-class, broadly cultivated minds in business. Thus a professor feels no call to defend freedom of enterprise with the same fervor that he brings to the protection of academic freedom.

"In fact, one of the strange paradoxes of our economy is that most of the controls which have been placed upon industry, and most of their restrictions upon private initiative, have been conceived by men who are fanatical in their devotion to the only form of freedom that touches them—namely, academic freedom.

"No scholar is so all-wise, so entirely self-sufficient in his competence, but that somewhere in the world outside a man is to be found who can teach him something.

"Given humility on the part of the professor, and respect on the part of the business-experienced layman, a significant two-way flow of knowledge, wisdom, and experience could be maintained.

"In fact, many an erudite course would be further enriched if the professor could bring himself boldly to invite a distinguished layman, who also knows the subject, to take over the podium for a lecture or two, once in a while."

Here We Go Again with Schlesinger and Galbraith

Last September "Dope" banged a few cudgels at the obviously demagogic provocations of two Harvard professors —J. K. Galbraith and Arthur Schlesinger.

They had tossed out remarks which were damaging and deleterious to our usefully decent industry, so we slapped back.

For even *daring* to disagree with this pair of Harvard *professors,* "Dope" was attacked by three partisan intellectuals on our own staff—and by *one* subscriber, Mr. Ralph Harris.

We are happy to announce that this subscriber, brother Harris, recently has communicated with us in a most conciliatory fashion. He hadn't read anything Schlesinger had written, and he hopes that we aren't sore at him.

Of course we're not. Friend Harris, we esteem you. This publication is dedicated to *Vox Populi* and *Pro Bono Publico.*

Mr. Harris believes that Jack Kennedy is doing a wonderful job, and that he will be one of America's greatest Presidents. Let us hope so.

Quickly this Kennedy sent "Soapy" Williams to Africa, Jake Galbraith to "affluent" India, and relegated Schlesinger to an innocuous committee. So far, so good—and the farther the better for all three.

Give Kennedy credit for this: he has recruited his team from the entire *spectrum* of opinions, attitudes, and beliefs prevalent in the constituency. He is anything but one-sided.

In the meantime, we can't wait to learn whether or not Prof. Galbraith, who deplores "affluent" air conditioning *per se,* moves out of the luxuriously affluent and air conditioned American Embassy in New Delhi into a sweltering native hovel next summer.

It's mighty easy to tell somebody else that he really ought to suffer for the good of his soul, or something.

Out of Our Mailbag

Portland Fixture Co.
Portland 9, Ore.

Editor:

If Ralph B. Harris of Bronx, N. Y. wants a refund of any prepaid subscription to the NEWS because of your criticism of Professor Schlesinger, please make the refund on my behalf and bill me for it.

E. E. WILSON

The Brown Mfg. Co., Inc.
Avalon, Pittsburgh 2, Pa.
Editor:

Nothing has been more amazing, nor disturbing, in the NEWS, than the reported answer to a query, by Mr. Schlesinger, that he was content to rest on the attitude of John Ruskin of nearly a century ago.

If our political Egg and/or Figureheads can do no thinking on their own, and are content to assume as their own, the opinions that obtained a hundred years ago, our Country's progress is foredoomed.

Even Mr. Ruskin, if alive and spouting today, would probably be almost eager to quickly revise the century old quote attributed to him.

Hibernation is a procedure that some animals enter into without any urging or training, or hints from a Ruskin, et al.

I enjoyed your forthright response. Let us sincerely hope that Mr. Schlesinger and others of our President's so called 'Brain Trust' do not have a whole file of ancient quotes and ideas catalogued in their minds, ready to pull forth into the light in answer to problems and queries on any and all subjects.

WALTER R. BROWN

Story of the Week

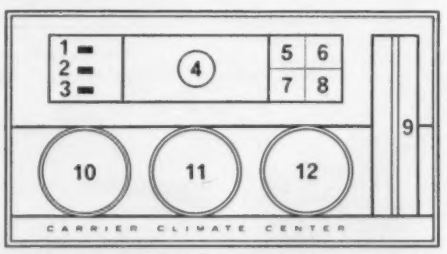
In religiously-divided Ireland a Catholic newspaper, *The Independent,* reported a fire at "Pat's Pub" in one brief sentence, and added:

"Mr. O'Toole's sister, Mary Theresa, is serving in an American school. Pat's brother, Father Joseph O'Toole, was in the African Congo at last report."

Same saloon conflagration, as reported by the Protestant *Irish Times:*

"Presbyterian Church on O'Connell St. was saved from damage when a fire in Pat's Pub was snuffed out by Owner O'Toole's neighboring creditors."

EXTRA ADDED ATTRACTION FOR EXTRA PROFITS ...THE DRAMATIC CARRIER CLIMATE CENTER!



THE CARRIER CLIMATE CENTER REPORTS: 1—heating or cooling cycle; 2—fan operation; 3—night setback; 4—indoor temperature setting; 5—filter cleanliness*; 6—pilot light operation*; 7—condensate drain operation*; 8—compressor performance*; 9—outdoor temperature; 10—clock and night setback indicator; 11—barometric pressure, and 12—indoor temperature and humidity. **optional*

What's the appeal of this handsome 8-by-12-inch satin aluminum panel that mounts between studs? It's a control center, a weather bureau and a complete heating-cooling system monitor!

It makes the homeowner master of the well-being of his family. He can custom-tailor climate to their preferences. He can see the performance of his system—and precisely control it. See what the weather is outside—and what it will be tomorrow. And see new ways to operate his system more economically. One example: a timer that can be preset to automatically lower the temperature in the house during sleeping hours. In fact, the Climate Center has so much appeal it's a snap to sell—for *extra* profit—with every Carrier installation.

The Climate Center is just one of many Carrier products that make a Carrier franchise so profitable. Carrier offers a complete line of air conditioners, furnaces and heat pumps to help its dealers corner the market. For details, call your Carrier distributor listed in the Yellow Pages. Or write Carrier Air Conditioning Company, Syracuse 1, New York.

Carrier Air Conditioning Company

VIRGINIA Chemicals®

REFRIGERATION BULLETIN

"Helpful facts for the serviceman"

ANSWERS TO FIELD CHARGING PROBLEMS

CAN-O-GAS®—INDUSTRY'S WIDEST CHOICE OF REFRIGERANTS AND CHARGE SIZES

Can-O-Gas provides a reliable and convenient method for adding regular or critical charges of refrigerants in the field. No heavy cylinders or metering devices to lug along, no deposits on cylinders. Can-O-Gas comes in small, compact cans you can use and discard.

The Can-O-Gas method introduces a wide choice of refrigerants in preweighed charges of a few ounces to several pounds.

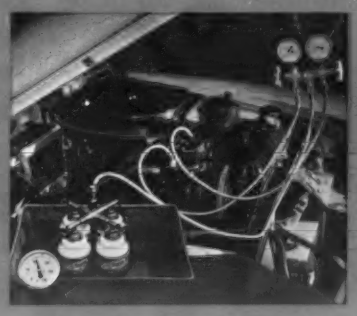
SPECIFIC ADVANTAGES OF CAN-O-GAS

- Charging or recharging can be done accurately away from the shop
- Contamination by moisture and noncondensable gases is avoided
- Vapor pressures for gas phase charging can be easily maintained by warm water immersion
- Simultaneous opening and dispensing of 2, 3 and 4 cans of refrigerant provides preweighed charges of 30, 45, 60 oz. or combinations thereof

CALIBRATING DEVICES ELIMINATED

The Can-O-Gas handy field-charging method makes possible addition of preweighed regular charges or of fractional charges without need for scales or other devices. With the use of Multi-Openers, it is possible to deliver charges from 15 to 60 oz. in increments of ½ oz.—with an accuracy of ±4 grams.

PRINCIPAL USES OF CAN-O-GAS



Can-O-Gas has been widely accepted by service and maintenance men for in-the-field charging of water and beverage coolers, freezer cabinets, and auto air-conditioning systems. They can rely on Can-O-Gas for maximum controlled purity and for greatest accuracy without cumbersome containers and measuring devices. There is no easier way to add critical charges of refrigerants in the field in either the gas or liquid phase.

MULTI-OPENER

Dispenses contents of a single can or up to four cans one by one or simultaneously for fractional charging.

SINGLE CAN VALVE OPENER

For any size Can-O-Gas, clip-top or screw-top. Opens 15 or 16-oz. cans. Special nylon seat assures positive shutoffs.

HOW SUPPLIED

Freon-12* is supplied in 15-oz. cans and a wide variety of preweighed charges. Freon-114* and sulfur dioxide are supplied in 1-lb. cans; Freon-22* in the new 1-lb. and 2-lb. aluminum disposable cans; and methyl chloride in 2-lb. steel cylinders. All Can-O-Gas products are available in screw-top or clip-top closures.

"Virginia" is the only national sales agent and authorized repacker for Du Pont's Freon* refrigerants. They are supplied in all popular sizes.

**Du Pont registered trademark*

See back page for full line of refrigeration products

FOR TROUBLE-FREE MAINTENANCE USE "VIRGINIA" REFRIGERATION PRODUCTS

"Virginia" Scale & Corrosion Inhibitor

Reduces scale buildup sharply, keeping scale-forming solids in suspension or solution. Less scale, less labor, lower maintenance costs.

"Virginia" Liquid Scale Remover

Ideal for heavy scale. Dissolves 3 lb. of scale per gal. Works fast. Inhibited to prevent metal damage. (Anti-foam agent and test papers included with every container.) Light shatterproof throwaway container for easy handling and easy pouring.

"Virginia" Solid Scale Remover

Highly inhibited—safe for use on galvanized, dipped zinc and aluminum water-cooled equipment. Destroys algal growth. Contains 96% sulfamic acid.

"Virginia" Algae-Cides

Adaptable to the special use requirements in (1) towers, (2) evaps, (3) air washers, and (4) ice machines and drip pans. A new No. 4 high-potency formula kills the tough resistant types of algae.

Du Pont FREON® Refrigerants

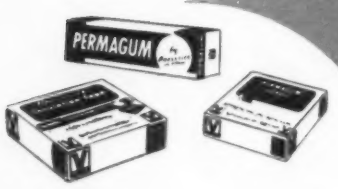
Nonflammable, nontoxic, stable, odorless

Best known for premium quality. Most widely used refrigerants in the industry. "Virginia" is the only national sales agent for Du Pont "Freon". F-11,* F-12,* F-13,* F-22,* F-113* and F-114* are available in cylinders of all popular sizes.

**Du Pont registered trade mark*

"Virginia" Ice Machine Cleaner

Eliminates slow freezing, bad taste and odor. Will not injure enamel or polished metal surfaces. Highly effective on automatic cube or flake ice machines.



Presstite Insulation

Tape—ideal for stopping pipe drip. Adheres to any dry surface. *Permagum slugs*—seals seams, copper tube, BX and conduit entries against moisture. *Cords*—nonstaining, odorless, shaped for use on display cases, freezers, room coolers, etc.

VascoCel Insulation

Preformed of soft, durable, clean, odorless Neoprene. Cuts time and labor costs sharply. Closed-cell structure makes condensation impossible. Ozone, oil, acid, and fungus resistant. Application temperature range 0-220°F. Available in ⅜", ½" and ¾" wall thickness.

"Virginia" Degreasing Solvent

No. 10 has low toxicity, is noncorrosive and fast drying. High flashpoint of 154-160°F reduces fire hazard; dielectric strength 20,000 volts.

Ask about "Virginia" "Freon 11" Cleaning Solvent for motor burnouts.

"Suniso" Refrigeration Oils

G Oils are improved for greater stability and lower waxing point. Available in 3G-150 SSU, 4G-300 SSU, and 5G-500 SSU. Dual Inhibited oils have same low wax point, resist breakdown and copper-plating even more effectively.

Can-O-Gas® Packaged Refrigerants

Throwaway cans—full line in screw-top or clip-top cans. Wide variety of preweighed charges, accurate to ±4 grams. Selection of Freon® gases, sulfur dioxide, and methyl chloride.

Carried by wholesalers everywhere. Order from one nearest you or contact Refrigeration Division, VIRGINIA SMELTING COMPANY, West Norfolk, Va.

Available in Canada and many other countries

"Virginia" is the only national sales agent and authorized repacker for Du Pont's "Freon" Refrigerants.

D77 Form 523

Printed in U.S.A.

Manuf Compo Elects

DALLAS Air Conditio Associatio changed name, broa the scope activities, elected a executive tor.

New nam the group Automotive Conditioning sociation, "manufactur date compo and supplier mitted as Since its for group has manufacture trunk type ers.

Enlarged ciation's wo research, i component ports, public ting of eng for the indu sorship of t auto air with the So Engineers.

Newly-elec tor is D. A. dent and g A.R.A. Mfg G. R. Holl serve for 1961.

Members tioning mar of the assoc

A.R.A. Prairie, Tex eration, Inc Corp., Kansa Mfg. Co., F Climatic Air Eaton Mfg. Cleveland; Houston; F las; Frigiqu City; Intern Air Conditi Lauderdale, Inc., Fort Mitchell Co. Mfg. Co., In nado Auto Corp., Brigh

Affiliate

American cago; Amer trols Div., Coupling Co Ark-Les Sw town, Mass.; Dallas; Cont ca, Milwau Inc., Mempl Co., Denver dustries C

For You

"Short, Short ing Fundamen Mail this ad address to: A & Refrigeratio Da Or

Auto Air Conditioning Today

A Special NEWS Report

Manufacturers Group Embraces Component Makers, Suppliers; Elects Brown Executive Director

DALLAS — The Automotive Air Conditioning Manufacturers Association has recently changed its name, broadened the scope of its activities, and elected a new executive director.

D. A. Brown

New name of the group is Automotive Air Conditioning Association, dropping the word "manufacturers" to accommodate component manufacturers and suppliers who are now admitted as affiliated members. Since its formation in 1955, the group has consisted only of manufacturers of hang-on or trunk type auto air conditioners.

Enlarged scope of the association's work includes market research, industry statistics, component reports, credit reports, public relations, the setting of engineering standards for the industry, and co-sponsorship of the annual national auto air conditioning forum with the Society of Automotive Engineers.

Newly-elected executive director is D. A. Brown, vice president and general manager of A.R.A. Mfg. Co. Succeeding G. R. Hollingsworth, he will serve for the calendar year 1961.

Members of the air conditioning manufacturers division of the association are:

A.R.A. Mfg. Co., Grand Prairie, Texas; Capitol Refrigeration, Inc., Dallas; Cartrol Corp., Kansas City, Mo.; Clardy Mfg. Co., Fort Worth, Texas; Climatic Air Sales, Inc., Dallas; Eaton Mfg. Co., Heater Div., Cleveland; the Forston Co., Houston; Frigikar Corp., Dallas; Frigiquip Corp., Oklahoma City; International Automotive Air Conditioning, Inc., Fort Lauderdale, Fla.; Lindustries, Inc., Fort Worth; John E. Mitchell Co., Dallas; Parkomat Mfg. Co., Inc., Dallas; and Vornado Auto Air Conditioner Corp., Brighton, Mass.

Affiliate members are:

American Nameplate Co., Chicago; American-Standard Controls Div., Detroit; Anchor Coupling Co., Libertyvillle, Ill.; Ark-Les Switch Corp., Watertown, Mass.; Cary Products Co., Dallas; Controls Co. of America, Milwaukee; Electro-Lock, Inc., Memphis; Gates Rubber Co., Denver; The General Industries Co., Elyria, Ohio; Leece-Neville Co., Cleveland; McCord Corp., Detroit; Machined Parts Corp., Fort Worth; Modine Mfg. Co., Racine, Wis.; Ranco, Inc., Columbus, Ohio; Southern Aluminum Foundry Co., Tyler, Texas; Tecumseh Products Co., Tecumseh, Mich.; Torrington Mfg. Co., Van Nuys, Calif.; Viking Copper Tube Co., Cleveland; Warner Electric Brake & Clutch Co., Beloit, Wis.; and York Div., Borg-Warner Corp., York, Pa.

For Your Reprint Copy

"Short, Short Course in Air Conditioning Fundamentals." By D. C. Schaffer. Mail this ad with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

Anderson Manual Provides

Central Source of Parts Information

DALLAS — "With over two million automobile air conditioners now in operation, the need for a central source of information on parts availability and identification, and on flat rate time allowance for replacement of various components has become mandatory," states R. V. Anderson, president of Anderson Service Co. here.

Complaints about poor service can be traced chiefly to a lack of information available to servicing establishments, rather than to a lack of parts, according to Anderson, who is inventor of the Mark IV air conditioner now being sold by John E. Mitchell Co.

"I have many times seen busy service managers and parts men spend a valuable 15 minutes on long distance telephone calls trying to locate a replacement part by a vague description of the part and the unit on which it is mounted."

Anderson started his service company with the objective of providing "accurate historical information with regards to parts and models sold by all manufacturers of automobile air conditioners, together with cross reference information and flat rate time allowance for replacement of various components according to their manufacturer."

Spending more than 4,000 man-hours on the task, Anderson Service Co. has prepared a manual which makes available all such information in four sections.

The first section is a listing

(Continued on Page 19, Col. 1)

Climatic Air
presents the
CLIMATROL VALVE

What a Thermostat Does...

The thermostat is an accepted method for controlling the cycling of an auto air conditioner to prevent evaporator coil "freeze-up." Climatic Air's "Clima-stat" control cycles the unit by de-energizing the automatic clutch. *ALL* Climatic Air units have an automatic clutch.

The "Climatrol" valve has all the advantages of "Clima-stat" plus the features listed herewith. The "Climatrol" valve is a flow control device and not a by-pass valve! It represents the latest improvement for getting Climatic Air units "the COLDEST — the QUICKEST!"

advantages of "CLIMATROL" COOLING

1 — You can dial a constant pre-determined temperature.
2 — Instant COOLING, completely automatic, No FREEZE-UP!
3 — Less horsepower "pull" on compressor; Better gas mileage.
4 — Better cooling while driving in traffic and at reduced speeds.
5 — Unit allows more leg room by recessing further under-dash and occupying less total cubic footage.
6 — Reduces head pressures while maintaining constant cooling.
7 — Clutch is not cycled — lowering strain on it and lessening wear on belts, mounts, and other parts of the drive mechanism.

Another Exclusive from

CLIMATIC-AIR
REFRIGERATED
AUTO AND TRUCK AIR CONDITIONING

3030 CANTON STREET • Riverside 1-3837 • DALLAS 26, TEXAS

Capacity Control Automotive Compressor Eliminates Cycling Clutch, Hot Gas By-Pass

By Donald G. Harter, Director of Engineering, York Div., Borg-Warner Corp.

The York automotive compressors for 1961 model year have been modified to further extend their reliability and performance. The most obvious revisions to the compressor have been the external casting changes. The cast-on fins have been removed from all castings. These were originally intended for cooling, but extensive testing has shown that they are not required with the present compressor design.

Therefore, the crankcase casting shape has been revised to improve the flow of metal in the mold which in turn reduces casting porosity, eliminating one possible source of refrigerant loss. The cylinder head and bottom plate die castings have been strengthened by revising their contours and adding strengthening ribs. On the cylinder head the ribs actually extend above the valve mounting pads. This increased stiffness will make the compressors more tolerant of moderate liquid refrigerant slugging.

Pump Section Simplified

The ball bearing introduced by York at the front main position in 1960 remains unchanged except that its method of retention in the crankcase has been improved. The pattern of crankshaft oil drilling which prevents loss of oil pressure at high speeds due to the effect of centrifugal force, has been retained.

However, the oil pump has been changed from a spur-gear to an internal-gear type with one less tooth on the internal gear. This change makes it possible to greatly simplify the pump section of the compressor.

The rear main bearing support and cover plate are now combined with the pump housing, replacing seven separate parts with a single die casting. This reduces tolerance stack-ups, provides a more rigid support for the rear main bearing and improves the alignment of the assembly. At the same time the area of the rear main bearing has been increased by 22%, reducing unit loading correspondingly.

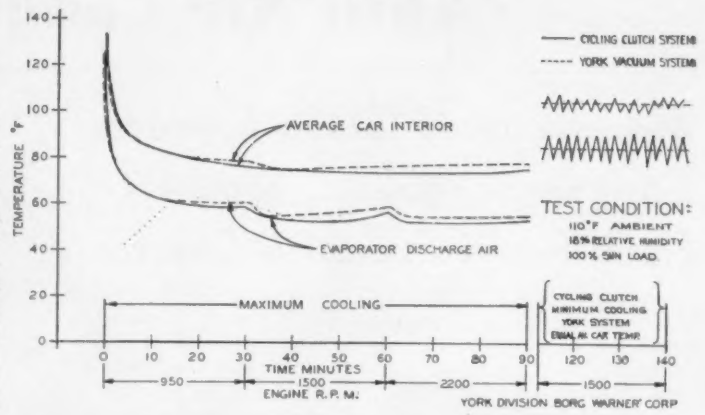


CHART compares results obtained by conventional cycling clutch system and the York vacuum capacity control system. At right is shown a constant load cooling condition.

The oil pump inlet tube has been replaced by integral passages in the rear bearing housing and the crankcase. This gives a freer flow of oil to the pump and together with increased pump capacity provides higher oil pressures at low speeds.

The crankshaft counterweights have been increased in size to bring this compressor as close to perfect balance as is possible with a two-cylinder in-line design. Counterweights are machined on all surfaces to assure uniformity in balance.

The plain compression piston ring used in addition to an oil scraper ring through 1960 has been replaced with a single ring which is a combination torsional twist and taper face design. This one ring actually gives better control of oil circulation in the system than the two rings it replaces.

Integral Capacity Control

In addition to the many advances incorporated in the York conventional compressors for 1961, York is presenting a revolutionary advancement in the art of automotive air conditioning. After two and one-half years of research and engineering, York is offering the industry a compressor incorporating integral capacity control. By using the York Capacity Control Compressor it is possible to eliminate the cycling clutch, the hot gas by-pass, or any other external device for the prevention of evaporator frosting and for the control of cooling air temperature. The control itself is integral with the compressor, requires no external refrigerant line connections, and maintains a predetermined evaporator refrigerant pressure.

Regulates Refrigerant Flow To Cylinders

The Capacity Control device itself is a balanced valve which controls the flow of refrigerant to the compressor cylinders. It is responsive to evaporator pressure and automatically maintains an intermediate pressure in the compressor crankcase to provide positive return of lubricating oil from the system.

The desired evaporator pressure is maintained by the absolute air pressure applied upon a diaphragm type servo unit mounted on the compressor inlet suction chamber. The pressure

Cooling off hot problems—

24 successes in 24 attempts...and ready for the 25th

Automotive air conditioning manufacturers have come to think of us as helpful *control* specialists in their highly specialized field.

Since 1953 that's been the case. Our engineers have been on the "hot spot," ironing out car air conditioning control and systems bugs in a hurry.

This same veteran technical task force has come up with 24 new cool-working solutions . . . designing and building thermostatic expansion valves, pressure regulators, drier-receivers and distributors shown above.

Whether a single component or the complete control package is the hot problem in your auto air conditioning, we'd like to make it our 25th challenge. And you get the follow-up economy of high-volume production plus the convenience of coast-to-coast jobber coverage for future replacements.

A note on your letterhead will bring fast action from Controls Company of America, Milwaukee 10, Wisconsin.

These independent automotive air conditioner and automobile manufacturers rely on Controls Company of America:

CHRYSLER
FORD
AMERICAN MOTORS
FORD, MERCURY DIV.
ARA
CAPITOL
CLARDY
CLIMATIC AIR
FRIGIKAR
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NOVI

Creative Controls for Industry

CONTROLS COMPANY OF AMERICA

HEATING AND AIR CONDITIONING DIVISION

HAC-34-60

2460 N. 32nd Street, Milwaukee 10, Wisconsin • Cooksville, Ontario • Zug, Switzerland

in this servo unit is reduced by engine intake manifold vacuum modulated by a control which may be varied by the driver.

This control, which is located in the evaporator outlet air passage, features a knob with 270° angular travel, giving infinitely variable evaporator pressures from a maximum "Cool" to a full "Off" position. In the "Off" position almost no cooling takes place.

A talk given at the 7th annual automotive air conditioning forum sponsored by the Texas Section, Society of Automotive Engineers, in conjunction with the Automotive Air Conditioning Association.

Since evaporator outlet air temperature is nearly proportional to the refrigerant pressure, the driver has complete control over the cooling effect of the unit.

In addition, a bimetal spring on the modulating control senses outlet air temperature and overrides the pressure sensing feature of the Capacity Control valve. Since the evaporator outlet air temperature will be higher during pulldown than during normal stable operating conditions, the evaporator pressure and temperature are reduced during this period to a point below which evaporator frosting would normally occur. This feature eliminates one of the disadvantages that has been attributed to pressure regulating controls in the past; namely the inability to provide as fast a pulldown rate as other systems.

What the Chart Shows

The chart shows the results of a comparative pulldown test between the conventional cycling clutch system and the York Capacity Control system. Outlet air temperatures and average vehicle interior temperatures are plotted against time at 950 rpm engine speed during pulldown and at increased speeds after temperature stabilization. Ambient temperature was 110°F and relative humidity 18% with a simulated sun load on the vehicle roof. You will note that under these conditions the pulldown rates of both systems are approximately equal.

On the right side of this chart is shown a constant load cooling condition with the cycling clutch control set for minimum cooling and the York Capacity Control adjusted to give a comparable average vehicle interior temperature. The 12° swing in evaporator air temperature resulting from cycling of the compressor is discernible to the vehicle occupants. It also appreciably reduces the dehumidification capacity of the system.

On the other hand, the York Capacity Control system operating at a constant evaporator temperature provides maximum comfort cooling under all conditions.

With the York Capacity Control Compressor the power absorbed from the engine is reduced in direct proportion to the reduction in pumping capacity. Therefore, the over-all load on the engine is reduced, resulting in greater vehicle operating economy. This means that it is now possible to replace an 8.7-cu in. compressor with a 10-cu in. compressor, giving the advantage of a more rapid pulldown without the former disadvantage of greater power consumption under reduced cooling load conditions. This new system also eliminates the noise, vibration, and rapidly varying engine loadings associated with cycling systems.

Eases Auto Cooling Testing

FIRST TESTER for automotive air conditioning systems off production line is presented to Mel O. Buehring, general sales manager of Simpson Electric Co., Chicago, by Mary Foster. Temperature tester Model TT permits mechanic outside the car to take temperatures at three different places by flicking a switch. He can get outside air, conditioner intake air, and air being discharged into car. Tester has two scales (-50 to 100°F, and 100 to 250°) and 15-ft long leads.

Anderson--

(Continued from Page 17, Col. 5)

of the year, make, and description of the automobile, together with compressors, compressor mounting brackets, pulleys, idler brackets, refrigerant hoses, clutches, condensers, and all major drive assembly component required by that automobile for proper installation, Anderson says.

Section two breaks down, with cross-reference, all the compressors used by the unit manufacturers.

The third section lists all parts by function: example, BELT, Compressor Drive; ARM, Generator Adjusting, or BRACKET, Compressor Mounting.

The fourth section illustrates and describes the evaporators manufactured by the various companies.

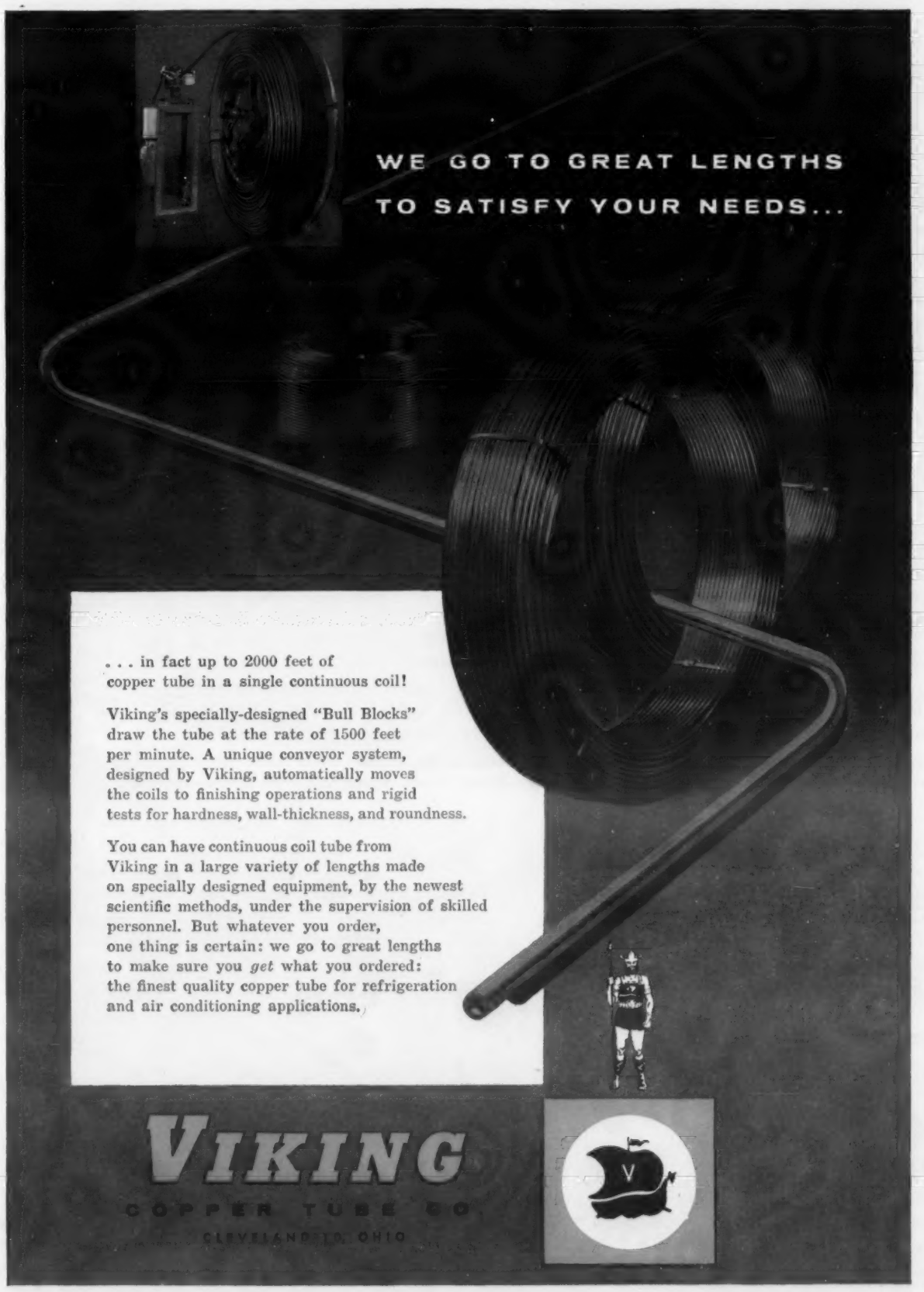
"It becomes easy to identify the evaporator you have, by the year it was made, the required refrigerant charge, the part number, the manufacturer's suggested list price and again the flat rate time, rate extension at $6 per hour, and total charge for the replacement."

Consisting of about 120 pages, the first manual will cover units from 1957 through 1960, Anderson states. The company will make no attempt to include current models, but will include a model "only when it has become history." The manual sells for $30 a copy.

Anderson, whose company is at 1515 Levee St., Dallas 7, stresses the impartiality of his service.

"We believe our service will help everyone, particularly the serviceman, and most of the manufacturers cooperated in supplying us with authoritative, accurate reference information.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.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Editorial

Is the Pursuit of Happiness and Health In America 'Conspicuous Waste'?

VANCE PACKARD has become a wealthy man in recent years by writing books which attack business, advertising, and merchandising. His theme: Somebody is diddling you.

It's relatively easy to demolish the half-facts and childish arguments which this refugee from defunct *Collier's Magazine* collates. But we can't blink the fact that his castigating books ("The Waste Makers," "Hidden Persuaders," and "Status Seekers") have topped the Best Seller lists for three years running.

Obviously, too many consumers feel that they've been cheated, rooked, disappointed, and *had*. Otherwise, they wouldn't listen to him, or buy his half-vaste tomes.

Hack-writer Packard has resurrected themes first pronounced by an expatriate Scandinavian—Thorsten Veblen—who haymakered against the "conspicuous waste" of well-fed American citizens.

Let's examine this "suffer, you sinners" hairshirt thesis.

When a modern mother finds time to help her children with their homework, should she feel guilty because she doesn't have to scrape the dishes, defrost the freezer, take out the garbage, and hang washing on the line?

If a middle-aged man with a cardiac problem can afford electric coils under his snow-encrusted driveway, is it conspicuous *waste* to install them? Or is it more constructive and less wasteful for this oldster to shovel snow and collapse from a heart attack?

Thorsten Veblen, Vance Packard, Art Schlesinger, and Jake Galbraith would have us apologize for enjoying modern conveniences like central heating, plumbing, refrigeration, air conditioning, and electricity. Are they right, these self-appointed Puritan throw-back intellectuals?

"Quite on the contrary!" steps up and asserts brilliant G-M Vice President Nelson Dezendorf.

"It seems to me that we should feel apologetic for *not* taking the greatest possible advantage of all our technological progress—for *not* freeing ourselves even more than we have from all the primitive, tedious drudgery, and discomfort which waste the most valuable possession we have—time."

Most Americans will agree with Mr. Dezendorf.

TIME is the measurement of our lives. When we waste an hour, we demolish something precious. Each life is all too short, as we all realize.

There is no waste of any kind which equates with the loss of time, therefore. And there is no greater project we can endow than that which gives us more time.

Despite the puritanical, witch-burning fulminations of Veblen, Packard, and left-wing Harvard burpers, we should encourage father to throw away his coal shovel, and install a modern time-saving, home heating and air conditioning system.

We should sell no-defrost freezers to grandmother. We should encourage every young housewife to acquire, according to her individual taste and means, all those advanced products which will help make her life better and more rewarding for herself and her family.

There's nothing perverse or unpatriotic in the fact that everybody wants to be cool in the summer and warm in the winter. Therefore, we aren't encouraging self-indulgence by proffering a central system which accomplishes that desire. Subscriber Nelson Dezendorf adds:

"Had we stopped our progress five or 10 years ago, it wouldn't exist. We're resigned to the fact that present progress will look pretty quaint in years to come.

"The minute one of our treasured ideas becomes dated, we'll know that we have moved a little further in providing a better, more labor-saving and less time-consuming way of doing things."

As for the future, all of us are obliged to take a closer look at the changes which are taking place in the woman's world.

Mrs. American Homemaker has been happily freed from much of her former drudgery. Are machines replacing her? No, sir! They are freeing her to fulfill more important needs for her family and community, making her a better mother and citizen.

"We are," Mr. Dezendorf concludes, "businessmen first and philosophers second, but we know that we will prosper as businessmen in the long run only if we continue to serve the prime American purchasing agent—Mrs. Housewife."

Amen, brother! Let's add to our time!

USE AIR CONDITIONING SPECS ALL YEAR

Climatemakers, Inc.
Norfolk 2, Va.

Editor:

Your March 6 issue of REFRIGERATION NEWS, with the ARI specifications is up to its usual excellent level.

We certainly join the many thousands of Air Conditioning people all over the country in adding our thanks to Mr. George Hanning for the excellent job he does in compiling this information yearly.

We use the information 12 months of the year.

HENRY T. RODGERSON,
President

COMMENT —

On rare occasions, it becomes impossible for us to complete an issue of the NEWS in time for its usual Monday morning arrival on your desk.

Every time this has happened over the years, without exception, we have received telephone calls from anxious readers asking, "Where is my copy of the NEWS?" If the paper is a day late, the calls are from nearby; if the paper is a couple days late, we get calls from all over the country.

Obviously, our readers look forward to each issue with the same eagerness and sense of freshness with which we prepare it.

'ENGINEERS RUN UP COST' OF HOME JOBS

Ivyland, Pa.

Editor:

This is in regard to the article in the NEWS about engineers being required to approve plans and specifications for heating and air conditioning systems. If the article is correct, I am to understand that every new home or alteration to a home is required to have an engineer lay out the system.

I have seen some of the systems laid out by engineers; they put in all kinds of extra items just to run up the cost of the job. Also, if the customer had to pay for their systems to be laid out by engineers they would never do the work.

I am in favor, however, of engineers laying out commercial and industrial work.

I have also seen jobs that were laid out by engineers and salesmen and contractors and still did not heat satisfactorily.

Therefore, it is my opinion that a reliable firm do the work whether or not it employs an engineer.

The firm for which I work has a man who has laid out heating systems for 40 years and is even called upon by other contractors to solve some of their problems. To my knowledge, there has never been any complaint about one of his systems not reaching design temperature or being a fire hazard.

IRVIN SLIGHT, JR.

OH, MISS POTHOOKS -- I'LL GO OUT TO LUNCH NOW---IF THAT LONDON CALL COMES THROUGH, TELL 'EM I'LL CALL BACK---MISTER DIMWIDDY AND I WILL BE AT THE BON FORUM---
YEAH? YOU KNOW WHAT BIGDOME SAID ABOUT DUCKIN' OUT EARLY!! WHAT LONDON CALL? ARE YOU KIDDING? HEY! WHEN ARE YOU GONNA TOTAL UP THE PETTY CASH? BULLGRAVY WANTS IT RIGHT AWAY----
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THE STRAW BOSSES COME AN' GO, BUT THE SECRETARIES AND OFFICE BOYS ARE STATUS QUO!
NOW THE ONLY WAY SQUIBBY WILL BE ABLE TO BIGSHOT IT IS TO PICK UP THE FEED BILL---
TRYING TO LOOK BIG IN FRONT OF A VISITING FIREMAN AS THE OLD SECRETARY CUTS YOU DOWN TO SIZE----
THANX AND A TIP OF THE HATLO HAT TO GEO. HATTAUER, E. STROUDSBURG, PA.
4-6
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They'll Do It Every Time

by Jimmy Hatlo

AIR CONDITIONING HEATING & REFRIGERATION NEWS
F. M. COCKRELL, Founder

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From the Files of the News

25 years ago . . .

In spite of the general agreement that one of the outstanding developments has been a shift of emphasis from units that supply heating exclusively to systems that offer some degree of air conditioning, there is a dearth of year-round air conditioners at the 12th National Oil Burner Show being held in Detroit. Delco-Frigidaire showed one of the few complete air conditioning units, and General Electric had an oil-fired heating system with provision for the addition of a summer conditioning unit. . . . During a recent meeting in Detroit, public utility company representatives visited a newly constructed residence which Kelvinator is using to test automatic heating and air conditioning equipment.

A NEWS survey revealed an upswing in commercial refrigeration sales in the Chicago area, part of it attributable to the 25-cent coin meter plan of financing sales. . . . "The air conditioning industry today is like a Balkan war," exclaimed Vice President Robert Kroeschell of Kroeschell Engineering Co., Chicago. "Everybody that's in it is fighting and struggling and moving in opposing directions, without knowing why they're doing it. Sale of air conditioning demands specially trained men, and the big question facing the industry is how these men are to be found." Kroeschell also deplored the failure of contractors to include estimating and engineering costs in their bids.

"How to Reassemble an Expansion Valve" was described in an article by Joe Askin, chief engineer, Fedders Mfg. Co. . . . The viewpoint of Harry Alter Co. taking issue with the 5-year protection plan on refrigerators was lauded in the "Letters from Servicemen" column.

A Standard Refrigeration Maintenance Agreement is being made available by the Refrigeration & Air Conditioning Contractors Association (RACCA). . . . Bush Mfg. Co. named Cecil Boling vice president and general manager. . . . The FTC issued a cease and desist order against the manufacturer of an ozone generator for falsely advertising advantages that the device actually does not provide.

Most simple definition of a "refrigeration and air conditioning contractor" is "one who is engaged in the installation or servicing of refrigeration and/or air conditioning equipment and who works for himself," states T. R. Reina, president of RACCA national. . . . A Detroit supermarket operator solved the problem of getting pre-packaged meats from the wrapping room to open display cases by installing a conveyor rack on the rear top of the 52-ft long row of open cases.

10 years ago . . .

A plea for standardization of refrigeration equipment for the military was made by J. W. Millard of the Military Planning Div., Quartermaster General's Office. . . . The U.S. Dept. of Commerce list of "essential" civilian activities—used by the Defense Department in determining whether or not workers should be drafted—has been reduced to 25 industry groups. Food processing and heating, including maintenance and repair services, are included.

CARSES Meeting, Educational Conference Slated for Long Beach, Calif. April 21-22

LONG BEACH, Calif. — All refrigeration men and their wives are invited to the 16th annual convention and educational conference of the California Association of the Refrigeration Service Engineers Society at the Lafayette hotel here Friday and Saturday, April 21-22.

Norman Sharpe of the air conditioning and refrigeration engineering faculty at California State Polytechnic college, San Luis Obispo campus, will open the program Friday afternoon with results of several years of research on "Refrigerant Piping and Oil Trapping."

Heat pump servicing (mechanical) is the topic of Lowell Trepp and Bill Farley of Lennox Industries. Recognizing power and voltages available for installations is the subject of Arthur Dietz of Vacaville, Calif., electrical contractor.

The Saturday morning program has Harry A. Seese of Santa Fe Springs, Calif., vice president and sales manager of Russell Coil Co., on "Engineering Walk-In Freezers, Storage Rooms, Sizing Coils and Other Units"; Ray Faille of General Controls at Glendale, Calif., on "Air Conditioning and Heat Pump Controls"; and Vince Klucz of West Norfolk, Va., Virginia Smelting Co., on "Water Treatment Sales and Application."

Saturday afternoon's program includes talks by Dr. James D. Colbert, D.D., vice president of the Christian anti-communist crusade; and Harry Watson, service manager for The Trane Co., on "Extra Large Tonnage 'Centravac' Units Using R-11 and R-112." The program will close with a question-and-answer session by refrigeration speakers.

Special activities have been arranged for the ladies both days, according to Bob Nichols of the Long Beach RSES.

GAMA Admits 2

NEW YORK CITY—Statham-Swearingen, Inc., Los Angeles, producer of gas absorption cooling equipment, and Sid Harvey, Inc., Valley Stream, N. Y., manufacturer of a gas conversion burner, have been elected to membership in the Gas Appliance Manufacturers Association, according to Harold Massey, GAMA managing director.

Get your copy

Operating Costs of Residential Air Conditioning and What This Means to Dealers and Installers. By R. A. Gonzalez—25¢ each.

Mail this ad with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

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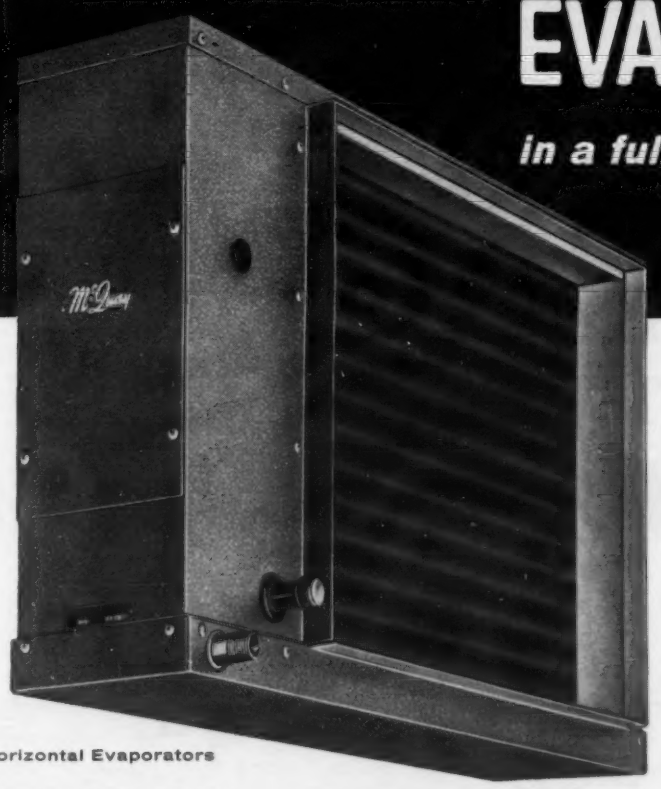

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AIR CONDITIONING • HEATING • REFRIGERATION

'Like Springtime All Year-Round,' Say Firm's Heat Pump Customers

By C. Dale Mericle

HIGH POINT, N. C. — "It feels like springtime all year-round."

That, says M. J. Zett, is what many of his heat pump customers have told him, and undoubtedly it's the best recommendation any contractor could imagine.

Owner of Zett Air Conditioning & Heating Co. here, Zett installed his first heat pump in July of 1954. Since then there have been many more in both residential and commercial applications.

In fact, he has a list of more than 150 residential customers which he gives to prospects, including installations in both new and existing homes.

"Your customers do your selling for you," Zett is convinced.

As far as he's concerned, though, Zett doesn't sell heat pumps.

"We sell a 'package of comfort' instead," he emphasizes.

In addition to comfort, however, operating costs loom important in the mind of the prospect. On this subject Zett points out that "we're heating and cooling 3,000-sq ft houses for $250 to $300 a year."

The high comfort and low cost are not accidents because Zett thoroughly engineers each application, installs it properly, and services it with care.

"Heat pumps have to be applied right and installed right," he insists. "Then they can be as economical as oil or gas."

While he prefers split-type heat pumps because of their flexibility, Zett recognizes that a single package heat pump can be installed successfully by a less experienced dealer provided that "it is applied right and installed right."

As for application, Zett will turn down a possible sale when it involves an existing home that is too loose or too old because he knows the results won't be satisfactory.

In his contracts he carefully spells out requirements for such things as insulation as well as storm sash and doors, he says.

"This doesn't necessarily mean I won't install a heat pump in a house that lacks insulation in the walls," Zett explains, adding that he simply wants the heat gain and loss to be within reasonable limits.

These figures are carefully calculated, which Zett insists is a "must" for successful heat pump applications.

To keep operating costs low, he aims at getting the balance point down to 30°F or less, using as his winter design conditions 70° at 10° outdoor temperature.

"Our basic principle in designing a system to achieve maximum winter comfort," Zett further explains, "is to keep all surface areas of the house as warm as practical. In a crawl space job, for example, we prefer to insulate the foundation walls, lay down a vapor barrier on the ground, and let the ducts in the crawl space warm the floor."

In engineering a residential heat pump job, Zett tries to wind up with 3½ to 6 air changes per hour, which he's found is "usually the best."

On an existing home which already has a central warm air heating system, Zett generally has to make extensive changes in the ductwork and replace all registers with air conditioning type outlets.

It's also very important to check the wiring, he says, also commenting that "we're having quite a bit of trouble with *high* voltage these days."

In the actual installing of a split system heat pump, Zett silver solders all joints in the refrigerant lines while the lines are filled with dry nitrogen.

Then a high vacuum pump is attached and the system pulled down to between 200 and 500 microns and held there for 30 minutes to check for moisture and leaks.

For checking leaks on a charged system Zett has found the electronic type leak detector invaluable, he says.

Servicing heat pumps is just as important as proper application and installation, Zett believes.

"You have to be very careful in service," he says. "This takes longer, of course, but you must not get sloppy in your service work."

Maintenance of Calcium Chloride Brine Covered

WASHINGTON, D. C.—Brief RB-1, "Maintenance of Calcium Chloride Brine," gives suggestions for accurately testing brine strength and tips for strengthening brine, corrosion inhibitors, and methods for correcting acidity and alkalinity, according to Calcium Chloride Institute, 909 Ring Bldg., Washington 6, D. C.

A chart indicates proper amount of calcium chloride needed in preparing or strengthening brine. For a free copy write the institute.

Lewin-Mathes Realigns Organization Into 4 Sales Areas, Plans 2 More

ST. LOUIS—The Lewin-Mathes Co., division of Cerro Corp., producer of copper tube and brass pipe, has realigned its national sales organization, creating four geographical sales regions.

The move calls for the establishment of two additional regions when markets in those areas increase sufficiently.

The four newly-created regions are: northeast, with headquarters in Maspeth, N. Y.; north-central, centered in Chicago; midwest headquartered at Des Moines; and southeast, based at Charlotte, N. C.

Rodrick J. Lewin, vice president-sales of Lewin-Mathes, explained the main purpose of the realignment was "to provide better service through closer and more frequent contact between customers, salesmen, and executive sales personnel. The step has been taken at this time so the sales department can effectively complement the Lewin-Mathes facilities modernization program which will be completed by the end of 1961."

Lawrence I. Fries, New York district sales manager, was named manager of the new northeast region which includes offices in Boston, Buffalo, New York City, Philadelphia, and Pittsburgh.

Manager of the north-central region is Robert A. Cook, who has been Chicago manager. Offices in his new region will be located in Chicago, Cincinnati, Cleveland, Detroit, and Milwaukee.

John R. Fanning, formerly Des Moines office manager, is manager of the midwest region. Lewin-Mathes offices in this area are located in Denver, Kansas City, and Minneapolis, in addition to Des Moines.

Guy L. Mendini, manager of the Charlotte office, was named manager of the southeast region which includes offices in Atlanta, Tampa, and New Orleans.

Glover To Manage 'Freon' Sales In Western District

WILMINGTON, Del.—Robert M. Glover, assistant manager of tetraethyl lead sales and planning in Du Pont's Petroleum Chemicals Div., is being transferred to the company's "Freon" Products Div. to become manager of the western sales district, effective Sept. 1.

R. M. Glover

At that time, Samuel N. Seely, Jr., now western district manager, will be transferred to the export sales section of the company's Dyes & Chemicals Div. as assistant manager.

Mueller Brass Names Duddy, Willlams

PORT HURON, Mich.—Mueller Brass Co.'s appointment of George I. Duddy as district manager of the Atlanta sales territory and Richard J. Williams as district manager of the Houston, Texas, sales territory has been announced recently by Robert L. Gibbs, general sales manager.

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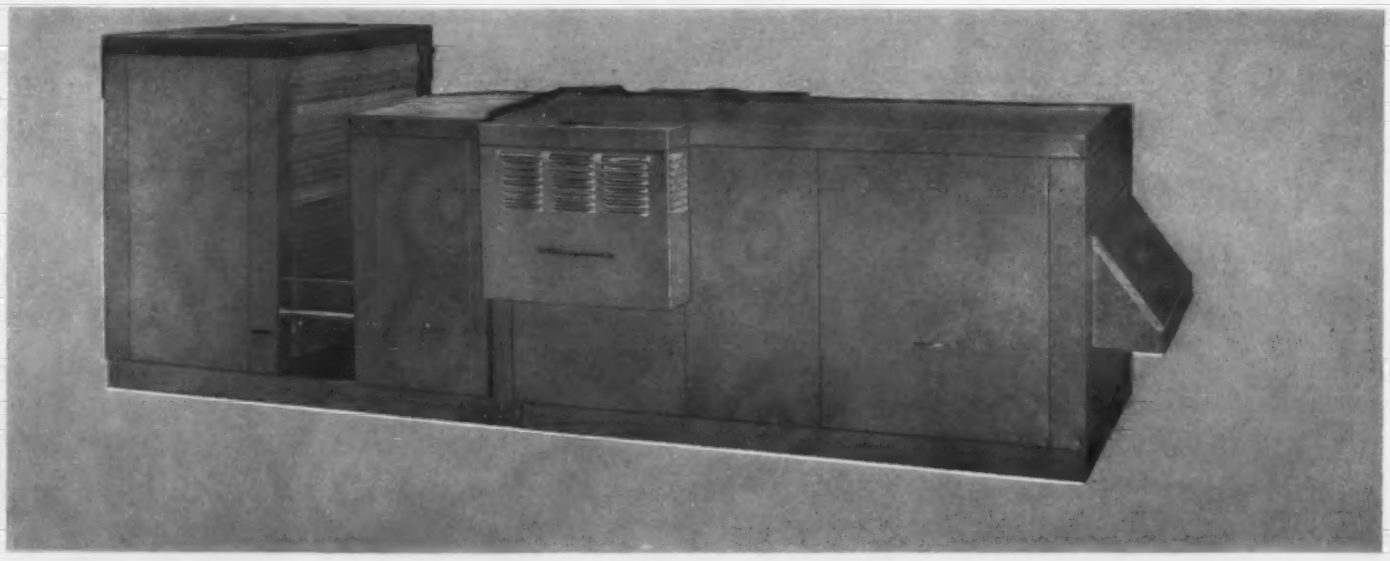


MANUFACTURERS' representatives gather with Davey personnel for a group picture after the Akron wholesaler's first trade show. Elmer Davey sits in center of front row.

VISITORS show intense interest in demonstrations by manufacturers' representatives and study exhibits carefully. Reaction was good, Davey reports.

Wholesaler Asks

How Can You Judge Success of Trade Show?

AKRON, Ohio—How can a refrigeration and air conditioning parts and supplies wholesaler evaluate a local trade show? How can he tell whether or not it was a success?

E. H. Davey of Davey Sales Co. here has just held his first show and is still asking himself and others these questions.

By many criteria, his show was highly successful, Davey believes. Twenty five exhibitors displayed their products and services on his display floor for two days. Fifty-six manufacturers' representatives and salesmen were on hand to explain their products and services.

Two hundred and thirty six servicemen and contractors came out to hear the seven excellent educational talks, view the exhibits, talk with manufacturers' representatives, and even buy.

Davey believes that, as a result of the show, an interest in new products was generated and resulted in some sales. More sales will result.

A desire to do a better job of installing and servicing was definitely accomplished.

A positive interest was generated in high quality tools for use in both installation and service. Particularly well received were vacuum pumps, acid pumps, voltage regulators. electronic gauges, new detergent cleaner, and applicators for cleaning condensers and coils.

Those in attendance claimed they were surprised at the quality of the educational talks and the use to which they could put the information in their business.

A large contractor told Davey, "If you ever put on another show, it will be a must for every man in our organization to attend—or he won't be with us."

He further stated that some of his methods would be changed to obtain more sales and increase customer satisfaction.

After the show, servicemen took the time to write Davey their appreciation. "It's unusual for a wholesaler to be complimented, especially in writing," Davey commented.

While those who attended the show were enthusiastic, Davey noted, the attendance was disappointing. Cost per individual attending the trade show was high.

Though the show was publicized in advance, apparently many in the trade were not impressed with its importance to them, Davey feels.

He found that many who did not attend expressed their regrets after hearing how good it was from those who did attend.

"How can you evaluate?" Davey asks. "Was it successful? Did it cost too much? Will the suppliers feel that it was worth the effort? Should we be happy that some people got some good out of it, or should some other method of education be tried?

"I don't know the answer," he adds. "But I do know that some of our customers and our own people are thinking now, where they weren't before."

Piping Data Book Readied by ARI

WASHINGTON, D. C. — The "Refrigerant Piping Data" booklet which the Air-Conditioning & Refrigeration Institute has had in preparation for several years is about to be published, according to ARI.

The new booklet, containing information in tabular and chart form not available elsewhere, supplements the ready-reference information with a discussion, with suitable references, of the basis for refrigerant piping design including instructions, with worked-out examples for application of the tables and charts. It contains 64 pages.

A mailing list of some 4,300 engineers has been notified of the fact that the book is now being readied for the press, and these recipients have been asked to indicate how many copies they want, so that printing runs may be established.

All ARI members also have been notified of the publication, with the suggestion that they, too, indicate the probable number of copies they will need, at $3 each.

Picketing Job Site Misused If Target Employes Not There

OMAHA, Neb.—By picketing construction sites when employes of Siebler Heating & Air Conditioning, Inc., the firm with which it claimed to have a dispute, were not working there, Local 3 of the Sheet Metal Workers International Association was clearly engaged in an illegal secondary boycott.

That was the conclusion of National Labor Relations Board hearing examiner Thomas N. Kessel, who recommended that the union be ordered to cease its picketing and its attempts to force employes of other subcontractors to refuse to work in an effort to get their employers to bring pressure on Siebler to deal with Local 3.

Kessel noted that Local 3 was not even certified as a collective bargaining representative for Siebler's employes.

According to information brought out at the hearing, Siebler, who operates a non-union shop, had refused to recognize or bargain with Local 3. As a result, Local 3 picketed his shop and on occasion, picketed three houses at which Siebler was doing work.

However, the pickets appeared at the houses at times when no Siebler employes were working there. As a result of the picketing, carpenters and painters had refused to do their work, although the pickets' signs specifically said their dispute was with Siebler only.

"It is amply shown," Kessel said in his intermediate report, "that the picketing at the Patrick and Anderson houses was intended by Local 3 to induce employes of employers other than Siebler to cease working.

"Obviously this was with the expectation that by disrupting the Patrick and Anderson operations these builders would pressure Siebler to capitulate to Local 3's demands for recognition and bargaining.

"This is secondary boycott action in its most elementary form and a clear violation of Section 8 (b) (4) of the National Labor Relations Act.

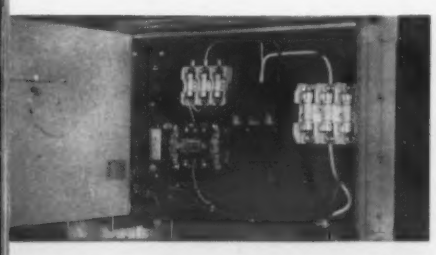
"There was no necessity of extending the picketing to Patrick and Anderson houses if the Local 3 purpose in so doing was merely to reach Siebler's employes."

COOLING UNIT SLASHES INSTALLATION TIME

Here's a Westinghouse package that has everything your customers want in air conditioning . . . and gets you off the job fast! It's a self-contained, combination heating and cooling unit specially designed for rooftop installation on single-story commercial or industrial buildings.

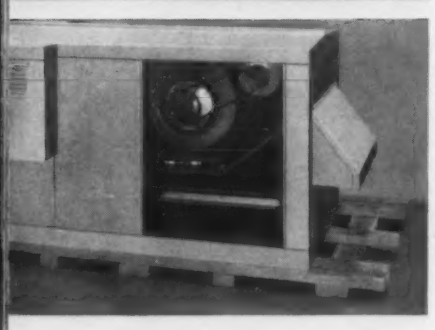
A glance at the features shows why the CRU is simplest of all to install. Fully assembled, a 7½-hp unit weighs only 2200 pounds—splits in two, to simplify rigging and handling.

What does this new Westinghouse development offer your customers? Turn the page.



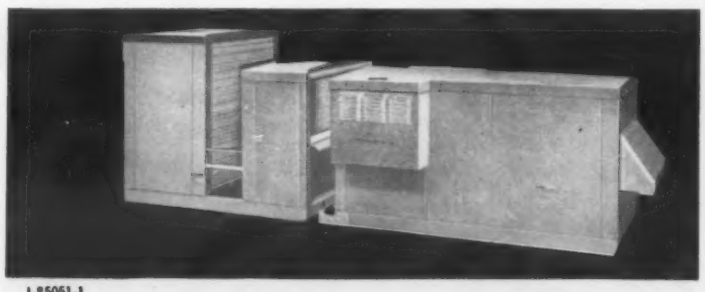
SECTIONAL CONSTRUCTION permits quick installation. Westinghouse CRU is divided into separate heating and cooling sections . . . each prewired.

FACTORY-INSTALLED REFRIGERANT PIPING CONNECTIONS AND WIRING. Cooling unit is precharged with refrigerant and tested. Weatherproof control panel installed.



EASILY REMOVED PANELS give immediate access to fan, fan motor and drive, filters, burners. No sheet metal screws to slow things down.

"CAN'T-LEAK" CHANNEL JOINTS. Specially designed panel and frame joints keep water out.



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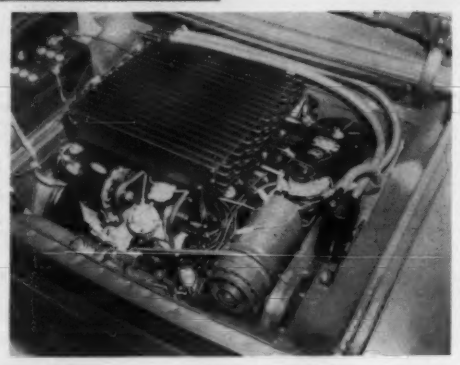
Westinghouse

Allied Refrigeration Made Philadelphia York Repair Depot

PHILADELPHIA—Allied Refrigeration Co. here announced that it has been appointed as the authorized air conditioning depot for the repair of York window air conditioners, exclusively.

Allied is presently the exclusive authorized repair station for Emerson Quiet-Kool, Gibson, Welbilt, Emerson Electric, Mitchell, Lewyt, Bryant, and Vornado window air conditioners, the company pointed out.

CORVAIR EVAPORATOR mounts high, has three adjustable cold air outlets. Control panel fits around radio to give built-in appearance. Air conditioner can be installed as accessory by dealers.



CONDENSER mounts horizontally above engine fan. Compressor is driven by separate belt and pulley. Dipstick and oil filler cap are accessible for normal servicing.

Chevrolet Designs Cooler For Rear Engine Corvair

DETROIT — Chevrolet Motor Div., General Motors Corp., has announced a factory-designed and installed air conditioner for its rear-engine Corvair coupe and sedan.

It also may be installed by the dealer as an accessory.

"Foot room in the front compartment is maintained by mounting the evaporator and blower up under the dash, with the outlet and control panel fitted along both sides of and below the radio for a built-in appearance," it was pointed out.

"Excellent air distribution is provided through three outlets. The center panel has adjustable louvers for directing the air flow up or down. Two circular outlets at the sides of the console can be rotated to the right or left for individual passenger comfort."

Taking advantage of the Corvair "flat" engine design, Chevrolet mounts the condenser horizontally above the engine cooling fan, which, it was stated, "draws a stream of air over the coils for efficient cooling over the entire range of engine speed."

The compressor mounts at the right rear of the engine. Access to engine and transmission dipsticks and oil filler cap is not obstructed by the air conditioner components in the engine compartment.

List price of the air conditioner was reported to be $349.70. This compares with $457.30 for the air conditioner for the standard Chevrolet, it was said.

Penn Acquires Pioneer Electronics Concern

GOSHEN, Ind. — Penn Controls, Inc. here, has acquired Pioneer Electric & Research Corp., Forest Park, Ill., through an exchange of stock. No financial details were announced.

Pioneer is a developer and manufacturer of solid state electronic devices in the fields of tele-communication and remote control. The company also manufactures miniature motors.

Ralph S. Penn, president of Penn Controls, said that Pioneer will operate as a wholly-owned subsidiary of Penn and will function independently under its present management.

The Pioneer company will continue to occupy its plant at 743 Circle Ave. in Forest Park, where it recently completed extensive modern facilities involving carefully controlled atmospheric conditions for the production of hermetically-sealed photocells and other highly specialized electronic components, it was noted.

Old Rules Don't Apply To Auto Cooling, Control Maker Finds

By Frank J. Versagi

DETROIT — "Old rules of thumb just don't apply to automobile air conditioning; therefore, to do justice to auto cooling technology, it has become necessary to study it as a separate phenomenon."

Jack Strauss, manager of product planning, refrigeration and air conditioning, American-Standard Control Div., stressed the uniqueness of automobile air conditioning in describing the Controls division's specially designed calorimeter.

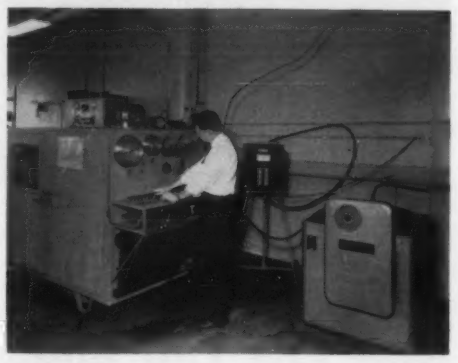
"Take a simple factor like pressure drop," suggested Strauss. "It is not unusual to have a pressure drop through an evaporator of 6 to 12 psi at 60 mph. While there is one unit with a maximum PD of 4 psi, it is not usual."

Strauss explained that such variations in pressure drop are frequently made necessary by factors over which the air conditioner manufacturer has no direct control. "Often the space allotted him in which to fit the unit determines total size of unit, of components like the evaporator, and thus determine pressure drop."

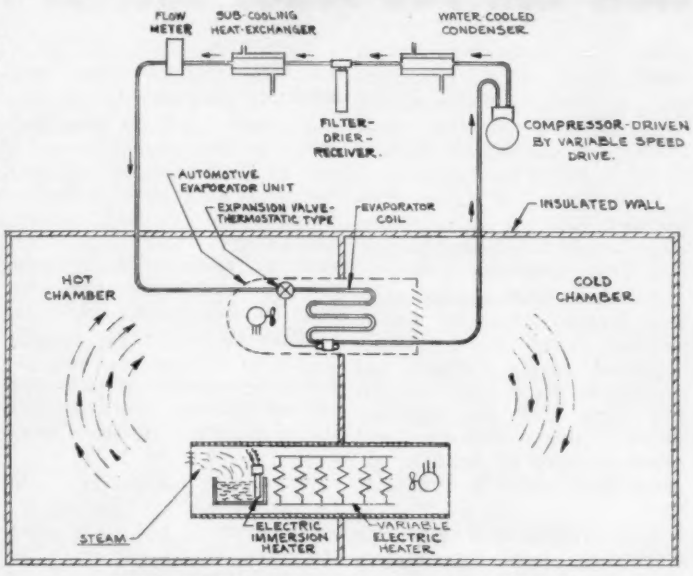
Expansion valves are another component which requires deviation from conventional rules at times, offered Tom Noakes, chief engineer. "An expansion valve on an automotive air conditioner is operating at a 4-ton capacity one moment, at ¼-ton the next," Noakes noted.

"In the first days, conventional commercial expansion valves were tried and did a passing job, but as conditioners and comfort requirements became more complex, more sophisticated, it became necessary to design expansion valves and other components specifically for unique functions."

American-Standard Controls Div. acknowledges that there has been steady improvement in auto air conditioners over the years. But the division, in its pioneering role as a manufacturer of valves and controls specifically designed for application in this type equipment, does not hesitate to point out that this progress has posed some un-



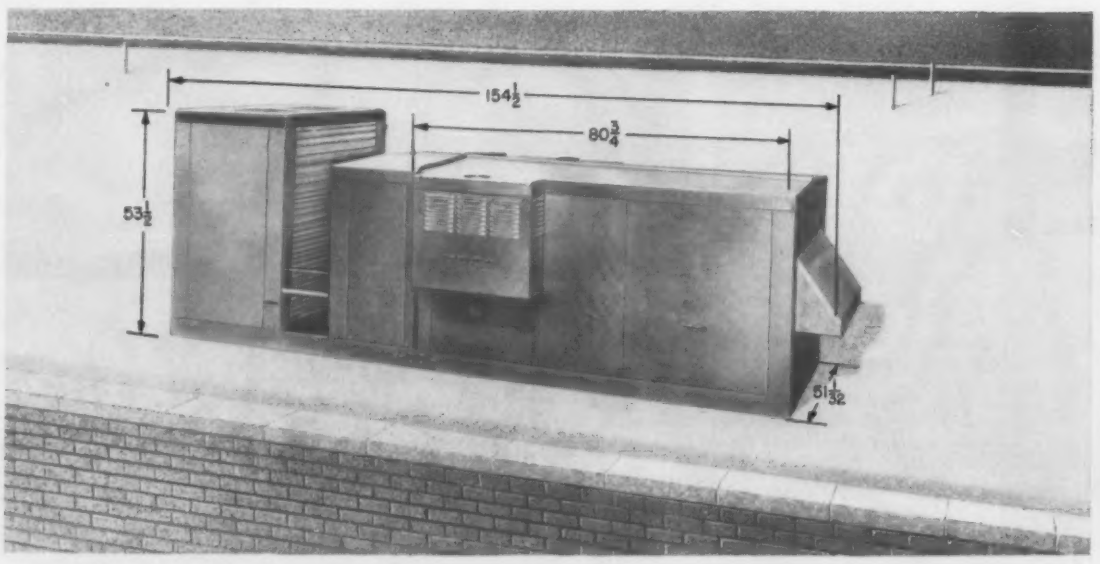
OVER-ALL VIEW of calorimeter developed by American-Standard Controls Div. for performance evaluation testing of thermostatic expansion valves designed for auto air conditioning. Thomas C. Noakes, chief engineer, operates pressure pick-up valves and electric heater switches.



SCHEMATIC diagram shows major elements of calorimeter.

THE ALL-NEW WESTINGHOUSE CRU

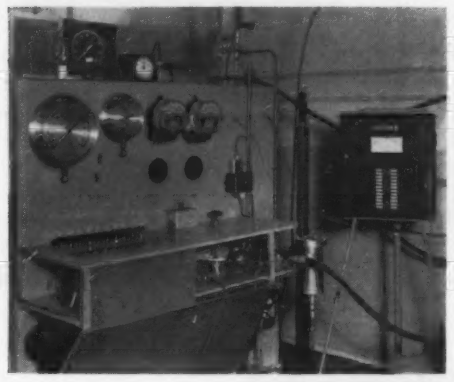
roof-mounted heating-cooling unit frees floor space for productive use



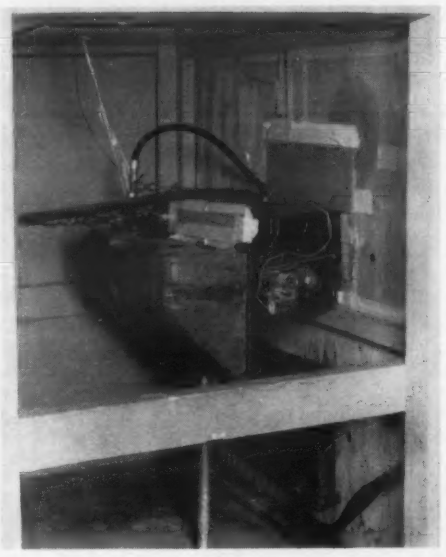
ALUMINUM CASING never needs painting, won't chip, crack or peel—provides complete protection for air handling system.

ONE-YEAR WARRANTY on entire unit with additional four-year warranty on motor compressor . . . your assurance of quality.

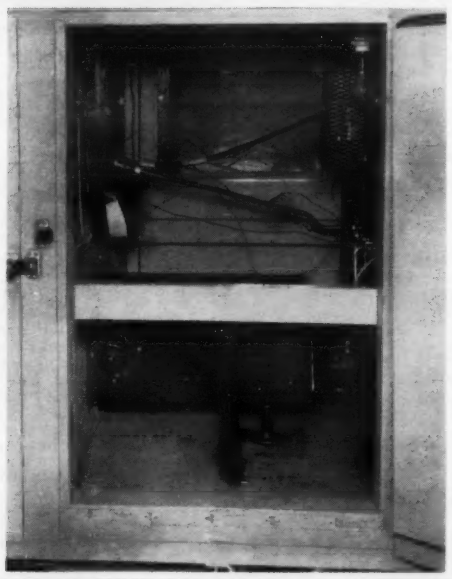
QUIET OPERATION: With all moving parts outside the space, you are assured of quiet operation.



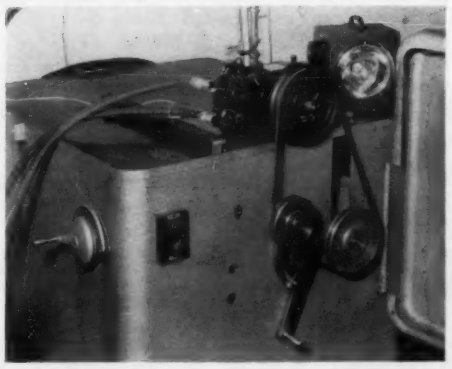
CALORIMETER control panel with full complement of pressure gauges, wattmeters, pressure pick-up valves, and electric heater switches. Vertical unit at right is liquid refrigerant flow meter, flanked by pushbutton operated thermocouple temperature indicator.



"HOT" CHAMBER close-up shows automotive evaporator. Expansion valve to be tested is located on evaporator inlet on unexposed side of unit. Hot air and steam enter chamber through wall opening in lower right corner.



INTERIOR of cold chamber shows evaporator discharge (upper left), refrigerant supply and pressure pick-up tubes (center), electrical resistance heaters and steam generator (bottom), and control panel hardware (right). Motor at lower left drives recirculating fan.



CABINET housing variable speed motor drive shown with handle at left for manually adjusting and controlling drive speed. Compressor is on top of cabinet with strobotac for measuring compressor rpm. Switch at far left is for compressor clutch. Pulleys at bottom facilitate quick compressor changeovers.

usual problems, particularly from the standpoint of equipment performance.

Among them, for example, is testing and evaluating basic components in the interest of increased operating efficiency. This was borne out by numerous road trips taken by division engineers.

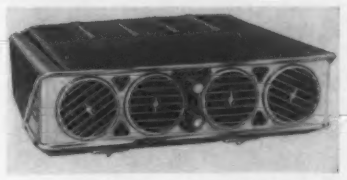
It soon became apparent that a test chamber was needed to evaluate performance of thermostatic expansion valves under varying operating conditions—conditions simulating as closely as possible those encountered on the road — with greater accuracy and closer control than previously possible.

The outgrowth of these exploratory investigations, including several makeshift lab test set-ups, is the division's present calorimeter test stand.

This experimental equipment has both contributed to and allowed measurement of the improvements which have taken place, feels A. Bahrani, product engineer who conducts many of the tests.

Essentially, the test setup is designed to allow nominal measurement of low side capacity and to permit perfection of control systems. (Set in an open laboratory without measured or constant ambient conditions, the unit is not designed for determination of capacity "within 500 Btu. Rather, its function is to permit operation of an auto air conditioner under conditions which closely approximate driving conditions; this includes the ability to slow down and speed up quickly and erratically.")

American - Standard Controls Div. has tested many units in cooperation with both automobile producers and auto air conditioning equipment manufacturers. The division frequently uses automotive air conditioning components in evaluating controls and devices for other applications.



"FROSTEMP" air conditioner

Lindustries Offering Two Lines for 1961

FORT WORTH, Texas — Lindustries, Inc., has unveiled its 1961 line of "Frostemp" automotive air conditioners.

"Our objective was to develop two lines that would cover the length and breadth of the market in quality, styling, and price," said William E. Lind, Sr., president of Lindustries, Inc.

The "top contender" in the dual line is the Frostemp 400.

The compact unit measures 15½ in. wide by 4⅛ in. deep at the face by 11½ in. front to back. The all metal cooling case with aluminum front and steel wrapper houses a pepped up, up front, squirrel cage blower system that pulls air over a coil surface that has been increased by 25%, the company said.

The Standard Frostemp makes up Lindustries' second, or promotional line. Besides a difference of design, the Standard Frostemp features an insulated styrene case front with softly contoured radiuses. This unit also features the up front squirrel cage blowers.

"Both lines have automatic controls with variable blower speeds and the pre-cool method of actuating the refrigerant in the coil," it was pointed out. "Both are equipped with four 360° adjustable louvers up front and two 360° adjustable louvers underneath. Mounting components include custom made brackets for a wide range of domestic, compact, and foreign cars."

The 1961 Frostemp line will be available to retail outlets through warehouses strategically located throughout the country, the company said.

Musical Note

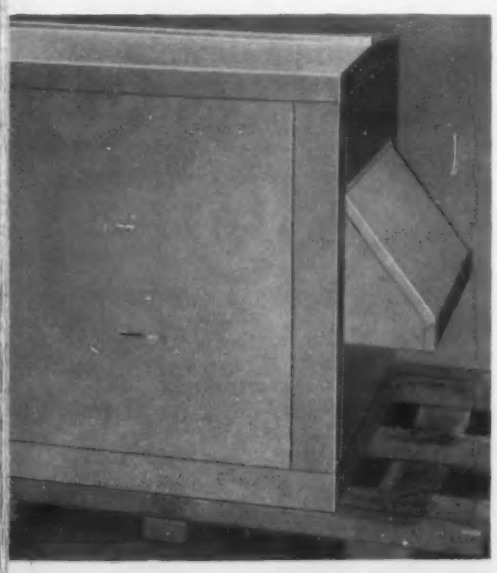
NEW YORK CITY — The praises of Harrison auto air conditioning are being sung by Peggy King, Jaye P. Morgan, and Roberta Sherwood on commercials scheduled for nearly 10,000 spots on 192 radio stations, it was reported here.

SAVES VALUABLE FLOOR SPACE

Every square foot of a one-story, commercial or industrial building can now be turned into useful space, because the new Westinghouse combination heating and cooling unit sits on the roof. That's why your customers will also find this space-saver ideal for existing buildings. A Westinghouse CRU installation requires no major building alterations.

This new Westinghouse unit provides an economical answer to many air conditioning problems. The CRU is economical to operate and maintain, super-quiet. It has famous Westinghouse quality.

Want to know more? Call your nearest Westinghouse air conditioning distributor or fill out and mail the coupon today. *You can be sure . . . if it's Westinghouse.*



Mr. Roy L. Sherrill, Jr.
Westinghouse Electric Corporation
Air Conditioning Division
P. O. Box 510, Staunton, Virginia

I want more facts on the Westinghouse CRU combination heating and cooling unit for rooftop installation.

Please (check one) ☐ Send me more technical data. ☐ Have your sales representative call.

NAME.....

FIRM NAME.....

ADDRESS.....

CITY.....ZONE.....STATE.....

J-85051-2

Westinghouse

HIGH VACUUM
PUMPS • GAUGES
EQUIPMENT
ACCESSORIES

• Indicators • Manometers
• Couplers • Leak & Moisture Detectors • Hoses • Valves

Expert technical assistance is available from Airserco to help you solve the "*tough*" ones.

SEE YOUR WHOLESALER OR WRITE US.

AIRSERCO MFG. COMPANY
435 Melwood Ave. • Pgh. 13, Pa.

Auto Cooling Sales -

(Continued from Page 1, Col. 5)

stalled. Thus the total after market—independent and dealer installations—account for 38% of the auto air conditioner market. Naturally, the more expensive the car, the greater the percentage of air conditioner installations . . . Cadillac and Lincoln air conditioner installations are nearly 50% of total production, while only 5 to 6% of standard Chevrolets are air conditioned.

The number of automobile air conditioners sold is equivalent to 10.4% of the number of U. S. automobiles produced during the calendar year. However, it must be remembered that an undetermined number of air conditioners are installed in used cars and imported automobiles.

John E. Mitchell Co.'s Mark IV Div. with over 39,000 units sold, Frigikar Corp. with 28,000 units, and A.R.A. Mfg. Co. rank at the top of the Independents with 16 other companies actively in the market, some operate primarily on a regional basis and present sales run as low as 500 units per year.

Table 3 lists sales by individual automobile manufacturers, as well as total sales for the independents for 1960 and 1959. It also includes a list of current independent manufacturers.

Retail prices of auto air conditioners remain relatively stable, ranging from $250 to $700 plus installation charge. The new units for compact cars are, as expected, priced at the low end of the scale.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Table 2—Automobile Air Conditioner Sales By Regions 1960-1959

Region	% of Total Sales, 1960	Unit Sales, 1960	% of Total Sales, 1959	Unit Sales, 1959
Southwest	38.0	264,868	49.8	287,576
Southeast	22.6	157,527	19.6	113,182
Midwest	17.2	119,888	12.1	69,873
West	16.4	114,311	14.9	86,041
Northeast	5.8	40,427	3.6	20,789

Table 3—Estimates of Automobile Air Conditioner Sales by Manufacturers

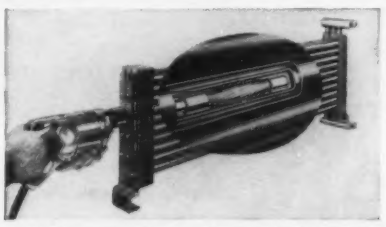
Automobile Manufacturers	1960	1959	1958
American Motors	17,432	14,358	6,237
Chrysler Corp.			
Chrysler, Imperial	22,100	13,754	11,270
Dodge	11,800	6,833	6,100
Plymouth Div. (inc. DeSoto)	10,775	13,258	10,600
Mo Par Div. (dealer installed)	13,250	....	....
Ford Motor Co.			
Ford	83,000	78,491	26,984
Mercury	15,900	35,000	19,346
Lincoln	12,250	....	....
General Motors Corp.			
Buick	45,200	27,116	29,596
Cadillac	74,891	54,015	41,804
Chevrolet	80,000	79,218	40,000
Oldsmobile	75,789	63,100	40,093
Pontiac	41,800	37,279	9,000
Total	504,187	423,094	241,211
Independent Manufacturers*	192,834	157,627	142,656
GRAND TOTAL	697,021	580,721	383,867

***Independent Manufacturers:**
A.R.A. Mfg. Co., Grand Prairie, Texas.
Capitol Refrigeration, Inc., Dallas 3.
Cartrol Corp., The, Kansas City 41, Mo.
Clardy Automobile Air Conditioning Co., Ft. Worth, Texas.
Climatic Air, Dallas.
Eaton Mfg. Co., Heater Div., Cleveland.
Forston Co., The, Houston 18, Texas.
Frigikar Corp., Dallas 20.
Frigiquip Corp., Oklahoma City 12.
International Automotive Air Conditioning, Inc., Fort Lauderdale, Fla.
Kauffman Air Conditioning Co., St. Louis.
Kool Engineering Corp., Chicago.
Lindustries, Inc., Ft. Worth, Texas.
Mitchell Co., Inc., John E., Mark IV Div., Dallas 26.
National Equipment Co., Denison, Texas.
Novi Equipment Co., Los Angeles.
Parkomat Mfg. Co., Inc., Dallas.
Vornado Auto Air Conditioner Corp., Brighton, Mass.

"Here's why I always pick H & M water-cooled condensers

...you can clean them safely because you clean them mechanically!

"Time was when I used chemicals to clean out the scale and sludge in my water-cooled refrigeration systems. But soon I found out that the chemicals were doing damage not only to the condensers but the cooling tower and pump, too.



"Now I always buy Halstead & Mitchell Water-Cooled Condensers, because they can be cleaned safely with a simple mechanical tool and an ordinary electric drill. The end plates remove easily to expose the water tubes."

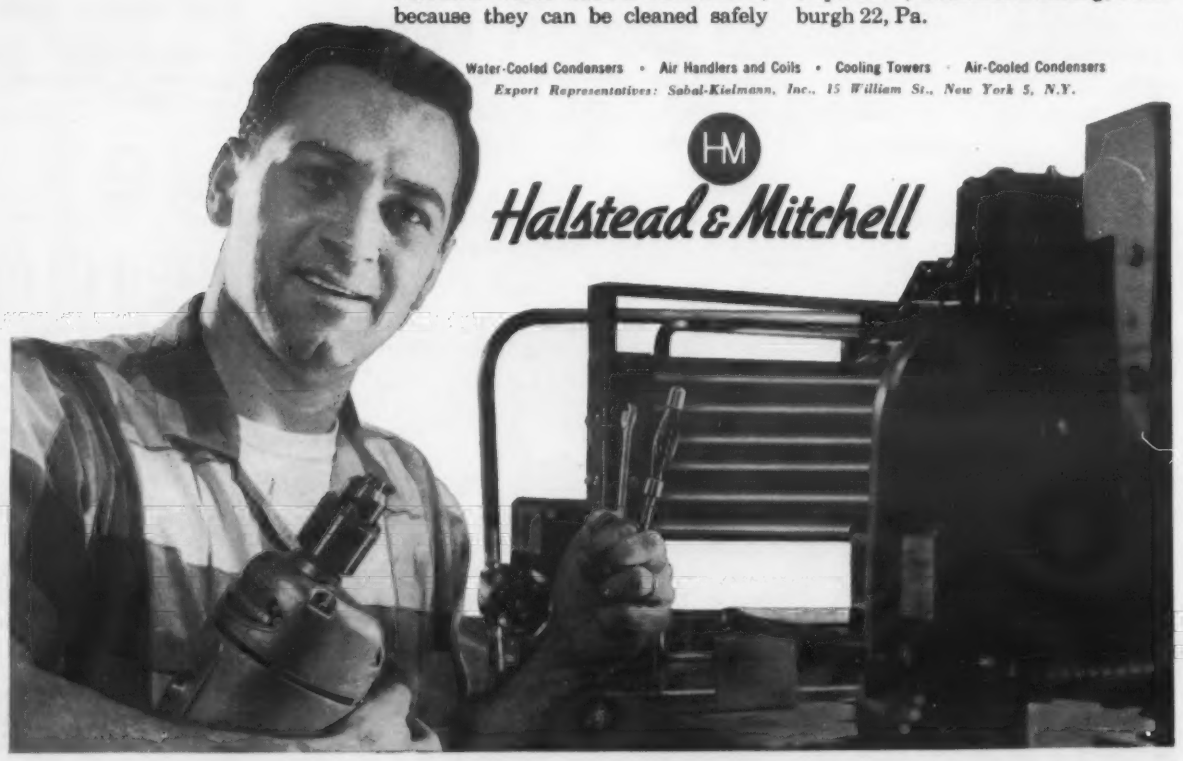
Another good reason to choose H & M condensers: they give more liquid sub-cooling because of the double-tube design and true counterflow of refrigerant and water.

There are five different types, including models for sea water or poor water conditions, in capacities of ⅓ to 25 tons.

Call your parts wholesaler for more information, or write for Bulletin WC-300. Halstead & Mitchell Co., Dept. H-43, Bessemer Building, Pittsburgh 22, Pa.

Water-Cooled Condensers • Air Handlers and Coils • Cooling Towers • Air-Cooled Condensers
Export Representatives: Sobal-Kielmann, Inc., 15 William St., New York 5, N.Y.

HM Halstead & Mitchell



Ruberoid Enters Fiber Glass Insulation Field

NEW YORK CITY — The Ruberoid Co. announced its entry into the fiber glass industrial insulation field.

Through an agreement with Pittsburgh Plate Glass Co., Ruberoid has added to its industrial insulation product line several types of fiber glass insulations produced by Pittsburgh, including pipe covering, duct insulation, and duct liner.

Orders for these products will be filled at Pittsburgh's plant at Shelbyville, Ind., and shipped under the Ruberoid name.

Ruberoid, a large manufacturer of building materials, has been in the high temperature industrial insulation business for many years.

Dunham-Bush - -

(Continued from Page 1, Col. 5)

conceived Dunham-Bush marketing program involving new approaches to product development, manufacturing, sales, distribution, and promotion," the announcement said.

Formerly Dunham-Bush product manager of air conditioning, Roth has been a prominent executive in the air conditioning and refrigeration industries for more than 25 years.

Prior to joining Dunham-Bush management, he was national sales manager of York Corp.'s Associate Div. He has also been national sales manager of refrigeration equipment for General Electric Co.

Mueller Offers Utilities Electric Heat Program

MILWAUKEE — Mueller Climatrol Div., Worthington Corp., has developed and completely tested a program for electric utilities to promote the use and benefits of a ducted electric heating system, according to R. B. Schmidt, general sales manager.

To insure field presentations to meet the needs of local utility companies, the Mueller Climatrol Ducted Electric Heating Program was "field-tested" in three key cities.

"We learned something from each of these presentations and have incorporated these experiences in our package program," said Schmidt. "Provisions have also been made to incorporate other ideas and suggestions within days after we receive them."

The program has now been turned over to Mueller Climatrol sales representatives in all parts of the nation to help inform utilities of the advantages of a ducted heating system. In addition, central air conditioning and other related topics for complete year-round climate control will be presented.

Local electric utilities who would like to receive more information about this program are invited to contact: R. B. Schmidt, Mueller Climatrol, Div. of Worthington, 2005 W. Oklahoma Ave., Milwaukee, Wis.

Cobell Enlarging Laboratory Facilities

CLEBURNE, Texas — New laboratories for research, development, and data verification soon will be completed by Cobell Industries, Inc., manufacturer of "Rangaire" air conditioning and heating equipment.

Harold B. Bailey, Cobell president, said that the company's sales and production "have expanded far beyond our projected goals" and that the new enlarged laboratory facilities "became essential to the continued high quality of Rangaire equipment."

Cobell recently unveiled a new line of air-cooled condensing units. Included were 13 models ranging from 24,000 to 120,000 Btu.

Wayne State U. Cools New Ed Classrooms

DETROIT — Cool classrooms are a feature of Wayne State university's new strikingly modern College of Education building.

The building reportedly has attracted wide interest, not only because of its unique design, but because it centralizes college offices and classrooms for the first time.

Classrooms, air conditioned and windowless, are contained in an inner core. Offices surround this inner block, protected by a glass outer wall. Minoru Yamasaki is architect of the building.

Whirlpool's 150-Minute Wonders

Short Course Trains Room Cooler Salesmen

BENTON HARBOR, Mich.— By the end of April, over 1,000 "RCA Whirlpool" retail appliance salesmen will become "150 minute wonders" on air conditioner sales—and will have diplomas to prove it.

Whirlpool Corp. sales executives will take a 2½-hour sales training course to dealers in an effort to help them improve retail margins and sales commissions.

April sessions were scheduled at RCA Whirlpool distributorships in Houston, Tampa, San Antonio, New Orleans, Los Angeles, and Kansas City. Later courses, designed to reach several thousand more dealers, will continue through June 15.

Reasons for the course, says Lincoln M. Larkin, general manager of air conditioner sales, include the fact that most salesmen only work with air conditioners little more than three months a year, don't have the opportunity to develop the same intimate knowledge of the product that they have on year-round items like refrigerators and laundry.

Without this knowledge of product and sales techniques, claims Larkin, few salesmen can sell away from promotional units to the quality models that most consumers would prefer if they were told about them.

By means of a six-minute slide-sound film, Larkin, factory sales training personnel, and cooperating distributors will show salesmen how an air conditioner is made and works. Then they'll cover the RCA Whirlpool product line, with emphasis on quality features. Finally, each course will give salesmen students a 10-point lesson in using this information to create a profitable sales.

The 10 points, covering such subjects as discovering from conversation what unit is right for the prospect's need and stressing the importance of buying quality, will be thoroughly drilled into salesmen's minds with what Larkin calls a "short course in a long memory."

Whirlpool has prepared a number of aids to help dealer salesmen carry the course into successful practice. Among these is a "30-second" pocket estimator to determine the RCA Whirlpool unit needed for any installation and an "X-Ray demonstrator," a simulated cutaway model of an air conditioner which, by means of moving lights, shows the prospect how the RCA Whirlpool air conditioner does its job.

At the end of each course, Larkin says, the students will take a 45-minute examination. While the papers are being graded, about five students from each class will compete with each other in making sales talks using the information learned. All those who get passing marks will get a diploma and a card verifying that they are accredited "air conditioning sales technicians."

A follow-up program has been developed to assure that knowledge dealer salesmen gain through the meetings is retained.

Designing a Milk Cooler?
Better Brass and Copper Products Since 1930
Those who specify H&H copper tubing for use in the manufacture and service of cooling equipment, do so because they *know* that H&H tube is always bright, clean, and uniform in color. Whether they buy it in coils or in straight lengths cut to their specifications, they know that temper and grain size will always be as ordered. So, if quality like this interests *you*, why not get further details from the H&H man in your area.
H & H TUBE AND MANUFACTURING CO.
271 North Forman Avenue, Detroit 17, Michigan • Offices from Coast to Coast
SEAMLESS
LOCKSEAM
COIL STRIP
STRAIGHT AND COILED TUBE
TUBULAR PARTS
H & H tube is brighter, cleaner
PLANNED FOR PRECISION

World Trade Corner

McQUAY, INC., Minneapolis, concluded an agreement during 1960 with F. Muller Pty. Ltd., a manufacturer of radiators, coils, unit coolers, and associated products in Sydney, Australia, it was noted in the annual report. Muller will make and distribute McQuay designs under license in Australia, New Zealand, and the neighboring islands. "We are planning to follow this same plan in other parts of the world as opportunities are developed," said B. E. James, McQuay president.

He also reported that American Automatic Ice Machine Co., wholly-owned sales subsidiary, has licensed some foreign manufacturers to make automatic ice makers, and these units are now being made in England and Brazil.

* * *

WARREN WEBSTER & CO., INC., Camden, N. J., manufacturer of heating and cooling equipment, has named Ballagh & Thrall, Inc., Philadelphia, as its Export Div. The firm will handle the Webster line throughout the free world except Canada.

* * *

AMANA REFRIGERATION, INC., Amana, Iowa, reports export sales, up 200% in 1960 over 1959, are booming along at an even higher rate this year. Credit for boom is given to a fully-staffed export department, a more aggressive approach to selling, a firm schedule of overseas travel to all important trade centers, and a policy of licensing local manufacturers where conditions permit.

Amana in 1959 set up a separate internal export department headed by Ben Douglas to replace an outside export agency. Shortly thereafter, Tom Parks joined the department as assistant export manager. The new department immediately began adding distributorships in Latin America, Europe, the Far East, and Australia, bringing the total up sharply from 12 to more than 90 today.

Licensing arrangements already in effect with the Linde Co. of West Germany were expanded and now also cover manufacturers in Argentina (the Aster Co.); in Mexico (American Refrigeration Products); and Australia (Standard Telephone & Cable).

* * *

BORG-WARNER CORP., reporting on expansions being carried forward by subsidiaries outside the U. S., said York Shipley, Ltd., England, is building a new plant for industrial refrigeration and air conditioning equipment at Basildon, a London suburb.

The report also revealed the purchase of a 50% interest in Le Froid Industriel Brissonneau —York, S. A., a contracting and sales operation headquartered in Paris and handling York industrial air conditioning and refrigeration equipment throughout France.

* * *

FEDDERS CORP. Export Manager Harlan Grosshans received two orders that left him in happy amazement.

The first came from E. Leon & Co., Inc., Fedders distributor in San Juan, Puerto Rico, where the average mean temperature is in the low 80's. The order? A shipment of gas-fired furnaces.

The second came from General Steel Wares, Ltd., Canada, for a job in Saskatoon, Saskatchewan, about 3½ paces below the Arctic Circle. The order? Twenty - three "FlexHermetic" central air conditioners.

Nussbaum To Tell Chicago NAPRE of Mission to Poland

CHICAGO — Otto J. Nussbaum, chief engineer of Kramer Trenton Co., will tell about his experiences on a technical mission to Poland last summer at the April 25 meeting of the Chicago Chapter, National Association Practical Refrigerating Engineers.

The meeting will be held at the Garfield Park Administration building in Chicago, starting at 7 p.m.

Nussbaum spent two months in Poland with his family as a United Nations technical advisor to the Polish Government on industrial ventilation and air conditioning. Traveling extensively throughout the country, he inspected industrial refrigeration and air conditioning installations made by Polish firms.

Also among his trips were a visit to the former Nazi camp at Auschwitz, and to the site of the Warsaw Ghetto uprising. The talk will be illustrated with color slides.

In addition, Nussbaum will speak on air-cooled condensing units for industrial air conditioning and refrigeration applications.

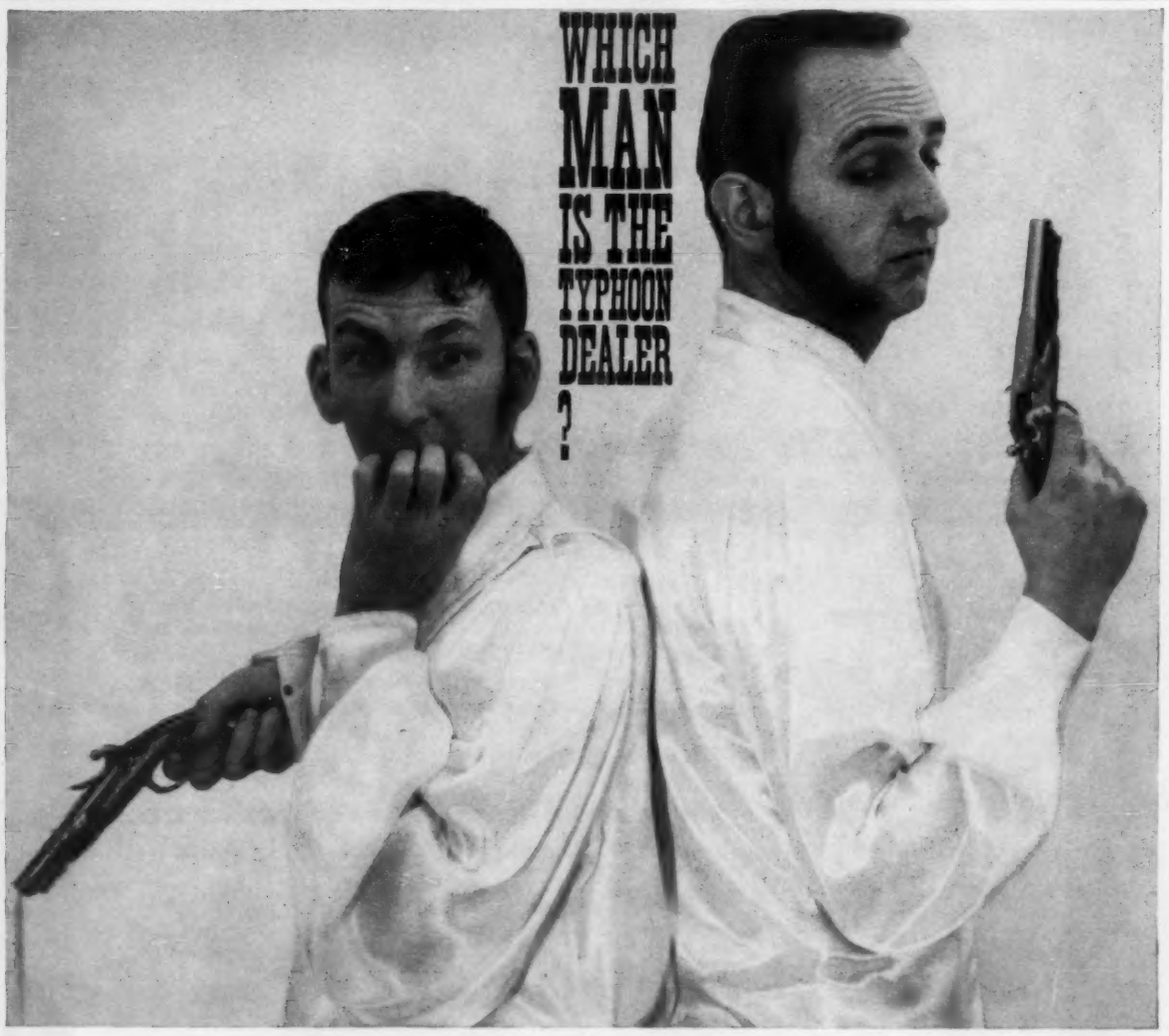
NLRB Examiner Bans Picketing To Sway Workers Not Involved

DALLAS—The act of picketing, despite what signs and notices distributed by the pickets might say, constitutes inducement or encouragement of employes who must perform services behind the picket line to engage in a refusal to perform services for their employer.

This is true whether or not the picketing results in a strike or refusal to work by employes. As a result it comes within the reach of Section 8 (b) (4) of the National Labor Relations Act if directed to one of the objectives therein prohibited.

So ruled National Labor Relations Board Trial Examiner Max M. Goldman in a case involving Carrier-Bock, air conditioning distributor here.

Goldman recommended that Local 59 of the International Brotherhood of Electrical Workers cease its picketing of job sites and attempting to induce employes of Carrier-Bock and other subcontractors to refuse to work in order to induce the general contractor or others to cease doing business with Anderson Co. Electric Service, the complaining firm.



The smug looking fellow. He knows Typhoon for '61 is loaded for sales! He's got more ammunition than ever before—with 28 new units. Typhoon's 1961 line—the industry's biggest, broadest, most flexible line of packaged air conditioners, furnaces, heat pumps. Unmatched in versatility, too. Only Typhoon delivers customized units at little or no extra cost. Mass produced components are custom-assembled to your order. This gives you a tremendous competitive advantage, helps you sell without sacrificing profit. Typhoon for 1961 also delivers these outstanding benefits: • Financing and leasing plans to simplify payment by customers, relieve distributors of monetary strain. • Sales help on the local and national level. • "Prescription for Progress"—a new master plan and individual promotional kits to sell Commercial, Industrial and Residential Markets. • Exciting sales incentive programs offer bonus benefits for you and your family. • All the material for more sales power in 1961! Why settle for a pop gun when you can have an arsenal? Contact Typhoon today for complete information and a brand new Reference Wall Chart of the 1961 Line. Use the collect telegram in this ad, or call or write us.

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Typhoon Air Conditioning Division,
Hupp Corporation
505 Carroll Street
Brooklyn, New York

Rush me full details on a Typhoon distributorship.

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TYPHOON
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Air Cooled Self-Contained
Units 3 to 30 Tons

WATER COOLER
10 GALLON
PRESSURE TYPE

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Attractive • Sturdy • Economical • Stainless Steel Drain Top • Nickel Finished Copper Cooling Tank • ½ h.p. Tecumseh Hermetic Unit • Pre-Cooler • 5-Year Warranty on Refrigeration Cycle • Conforms to Government Specifications •

Remcor Products Co.
321 East Grand Avenue,
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manufacturers of water coolers since 1949

REMCOR
Model CW10A

Also 5 gallon Bottle Water Cooler—*$89.50

Auto Unit Compressor Trends

No Radical Changes Seen Just Ahead But Expect Improvements In Some Areas

By E. R. Boynton, Tecumseh Products Co.

A talk given at the 7th annual automotive air conditioning forum sponsored by the Texas Section, Society of Automotive Engineers, in conjunction with the Automotive Air Conditioning Association.

What can the manufacturers of automobile air conditioning systems expect from the manufacturers of compressors in the several years just ahead? Will there be radical changes in compressors or will they remain just as they are now for a number of years? Probably neither. My guess is that for the next few years compressors will remain of the general type with which you are now familiar, but that they will continue to undergo substantial improvement.

Suggested Departures

There are, of course, a number of more drastic departures from the presently used fixed displacement compressors which have been suggested for use in air conditioning automobiles. By way of illustration, the following are a few such possibilities:

1. Electric motor driven hermetic units.
2. Mechanically driven constant speed compressors.
3. Variable displacement compressors.
4. Two speed drives.
5. Speed limiting drives.

The above are certainly not all of the possibilities. Perhaps, the compressor will be eliminated entirely.

However, all of these approaches appear to involve more complications than the presently used compressors and all of them are aimed, in some degree at least, at the basic problems of providing more uniform cooling capacity over the entire range of engine speeds and of better controllability. Although some of these more drastic departures—or some others not mentioned—may be successful in the more distant future, it seems that the most likely course of progress in the years immediately ahead is in the further refinement of fixed displacement compressors driven directly from the automobile engine, but more closely married to the control portion of the air conditioning system.

Some Ways In Which Help May Appear

Does this mean then that no substantial help can be expected from compressor suppliers in improving automobile air conditioning systems? No, not by any means. Some of the ways in which this help may appear are:

1. **Lower prices**—Certainly I do not know of any tremendous reductions in the immediate offing, but some moderate decreases should result from continuing cost reduction efforts. The automotive compressor of today already provides quite inexpensive cooling capacity. Where else can one buy as much Btu capacity per dollar?

2. **Some further decrease in size**—Here again, nothing spectacular appears likely, but still some reduction in certain dimensions should be possible. This might be accompanied by slightly higher speeds.

3. **Further improvement in quality**—This, of course, is always desirable and should result from the further accumulation of field and manufacturing experience as well as from further laboratory testing.

4. **Lastly, closer integration of the compressor with the air conditioning control system.** Particularly in this area, substantial progress can be made in the years immediately ahead. This should improve not only the job that the air conditioner actually does, but it should also improve its adaptability to all sizes of automobiles, and especially important, it should make automobile air conditioning even more salable.

Design and the successful operation of the compressor are very intimately tied up with the rest of the air conditioning system and especially with its controls. Some areas in which this is evident are:

1. Oil circulation and return.
2. Maximum loads, both steady and shock loads.
3. Provisions for adequate cooling.
4. Noise level under varying conditions of operation.

To those of you who make automobile air conditioning systems: As you well know, a compressor by itself will not cool an automobile anymore than any other part of the system will work by itself without the remainder of the system being present. The compressor naturally requires a mounting and a drive.

A condenser is also required and if this condenser is inadequate, not only is cooling capacity impaired, but higher loads are imposed on the compressor and on the automobile engine. This is of increasing importance with the advent of compact cars with their smaller engines.

Furthermore, the air conditioner requires an evaporator and a satisfactory means of distributing the cool air. As if all of these problems were not enough, you must still provide controls for the whole system, and the type of controls provided can have a very marked effect on the life and performance of the compressor.

The better the job that is done by we manufacturers of compressors, the easier it will be for you to produce complete air conditioning systems that meet all of your requirements and incorporate all of the desired features.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Car Cooler Was Prize

DENTON, Texas—A car air conditioner was offered by downtown merchants to help attract visitors to the Denton observance of Texas Industrial Week.

AFTER–MARKET AIR CONDITIONING

A GREAT OPPORTUNITY FOR EXTRA PROFIT

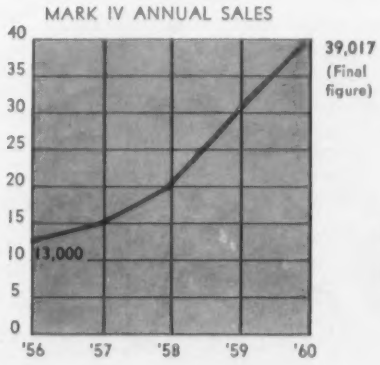
YOU'LL SELL MORE WITH MARK IV

THE UNDISPUTED LEADER IN SALES

THE TOP SELLER IS EASIER TO SELL

- The Mark IV program is *dealer oriented* from packaging to point-of-purchase sales aids.
- The unit is engineered for easy installation and lasting customer satisfaction.
- The 12 month or 12,000 mile warranty terms are generous, but claims are infrequent.
- Dealers are backed by a nationwide network of over 2,100 factory authorized service centers.

- Mark IV, with a full line of four models, fits almost every American car, many imports.



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3800 Commerce Street • Dallas, Texas

America's Top Selling Custom Installed Auto Air Conditioner

AUTO MARK IV AIR CONDITIONING

Drop us a card. Our nearest distributor or factory representative will call with full details.

'Crystal Tips' Machine Has 'Ice-Cycle Design'

● A new automatic "Crystal Tips" ice maker designated model A-14, which makes flaked ice the firm calls "bits" ice, has been introduced by American Automatic Ice Machine Co., Dept. AH&RN, Faribault, Minn.

The unit features new cabinet styling, more efficient insulated storage bin, and new "Ice-cycle" ice maker section design.

The new cabinet styling has a "ruggedly-constructed full-width" stainless steel door which makes it easy to remove the ice, the company pointed out. The model A-14 is equipped with a 60-lb storage bin that is stainless steel lined and is more efficiently insulated with a new type insulating material, it was stated.

This A-14 measures 38½ in. high, 24½ in. wide, and 26 in. deep. Six-inch "health code" legs are optional, at slight extra cost.

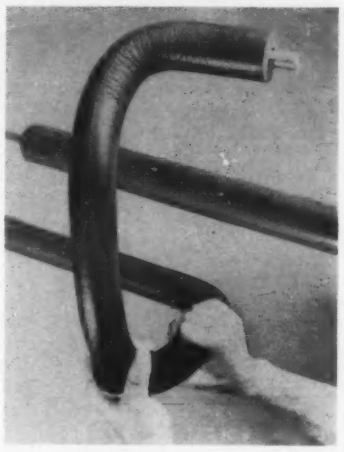
"The Ice-Cycle design," it was explained, "works like this: Water is frozen in an instant in an evaporator in the ice making section. A cylindrical ice cracker turns smoothly and slowly around the evaporator and 'harvests' ice as it builds up to a predetermined thickness. This ice is then efficiently lifted from the ice making section and deposited in the stainless steel storage bin."

'Puracon Filter Coat' Cleans, Deodorizes

● New "Puracon Filter Coat," packaged in 16-oz aerosol cans, "sprays on any clean filter in a normally effective forced-air heating or cooling system, transforming it into an air cleaner-deodorizer," according to Worth Chemical Products Co., Dept. AHRN, 413 E. Magnolia, P. O. Box 366, Fort Worth, Texas.

"Puracon has a glycol base that dissolves common organic gases and cooking odors," the company said. "It contains quaternary ammonia, a proven bacteria killer, that effectively kills odor-bearing micro-organisms and living bacteria on contact," according to the company.

Flexible, Foamed Pipe Covering Offered



● A new addition to its pipe covering line—a flexible, foamed plastic pipe insulation called "G-B Ultra*Foam" — has been announced by Gustin-Bacon Mfg. Co., Dept. AH&RN, 210 W. 10th St., Kansas City, Mo.

The product, available in tube or sheet form, is used to insulate liquid cooling and heating lines from sub-zero to 220°F in plumbing, heating, air conditioning, refrigeration, and industrial processing applications.

"G-B Ultra*Foam's closed cellular structure gives it a 'k' factor of 0.28 at 75° mean temperature, and a water vapor transmission rating of less than 0.1 perm," it was stated. "The product's fire rating is: 'self-extinguishing.'"

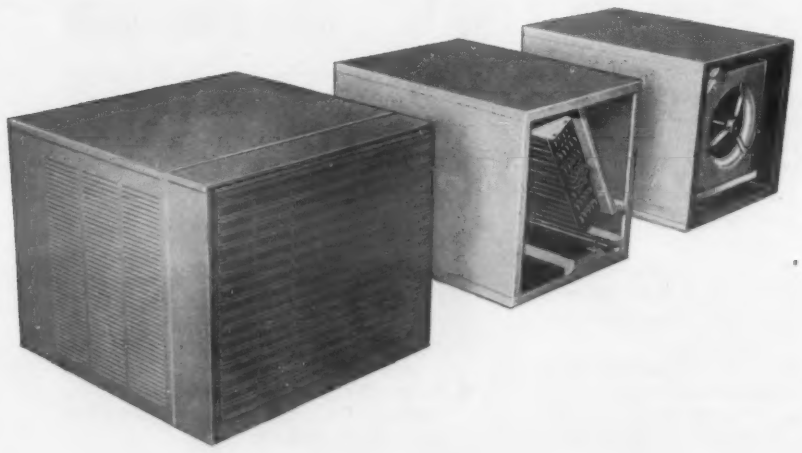
Tubular G-B Ultra*Foam can be slipped over new piping prior to installation, or slit longitudinally and snapped over existing piping. Sheets of G-B Ultra*Foam may be fabricated into pipe covering for sizes over 3-in. IPS. According to company engineers, G-B Ultra*Foam can be installed quickly and simply.

G-B Ultra*Foam in tube form is manufactured in 6-ft lengths, diameters from ⅜ to 3½-in., and in three engineered wall thicknesses, each calculated to prevent condensation on cold lines within their individual recommended usage ranges. In sheet form the new product measures 30 in. by 36 in., in thicknesses from ⅛ to ¾ in.

PERFECTION IN FLEXIBILITY

Perfection Heat Pumps are *true* heat pumps – not reverse cycle air conditioners. Each inside coil has an extra row of oversize tubes to provide full capacity on the heating cycle. Perfection Tri-Pak Remote Heat Pumps (like the one shown) fit any installation requirement. Indoor coils and air handlers can be combined to provide any air travel required – vertical or horizontal, up or down, right-to-left or left-to-right. Saves time and cost in any installation. Easy to handle and service. And, Perfection Tri-Pak Air Conditioners give you the same kind of flexibility. Both heat pumps and air conditioners are available in 2, 3, 4 and 5-Ton capacities to give you a model for any job. Complete selling flexibility? You bet!

Perfectionists are a select group of distributors and dealers. Want complete details? Write Perfection Division, Hupp Corporation, 1135 Ivanhoe Road, Cleveland 10, Ohio.



PERFECTION

Fluxless Solder Melts At Low Temperature

● A low temperature fluxless solder, "Tin-A-Lum," which "melts at extraordinary low temperature, thus eliminating the danger of metal destruction under heat," has been developed for use on aluminum and its alloys, zinc tin, pewter, magnesium, and other metals as well as castings, according to Metals for Industry, Inc., Dept. AH&RN, 299 Pavonia Ave., Jersey City 2, N. J.

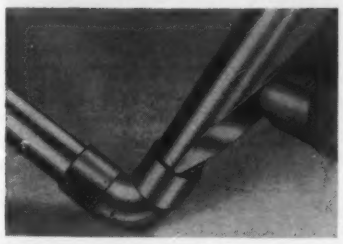
The inventor, G. P. Strike, was brought over recently from England to demonstrate this solder under the auspices of Metals for Industry, which is marketing this new product in the United States, it was indicated.

"Tin-A-Lum was perfected as a method of joining any dissimilar metals together and for use on all kinds of materials with the aid of a soldering iron or a light flame and without any flux whatsoever," the announcement said. "This all-purpose aluminum solder has proven to be of such tensile strength that it can even replace welding or brazing in many instances and at lower cost and less time."

Trying to find the right man for a hard-to-fill vacancy—the NEWS' Classified Ads are read by your man.

Place your ad today!

Joint Tester Allows on-the-Job Checks



● Currently being distributed nationally to plumbing contractors is a Nibco-developed joint tester made of 0.010 in. spring steel, according to Nibco, Inc., Dept. AH&RN, 500 Simpson Ave., Elkhart, Ind.

"The new tester enables contractors to make on-the-job examinations for proper clearance between fitting and tube before soldering, and thus avoid possible failures later," the company said. "By trying to insert the tip of the tester into the joint before soldering, proper soldering clearance is quickly checked. If the tester can be inserted, the clearance is too great, and is a danger signal. Either the fitting's solder cup is too large or the tube too small in diameter."

New Approach to Water Treatment Problem

● What is said to be a new approach to the problems of water treatment was announced by L*A Water Conditioning, Inc., Dept. AH&RN, 1007 Air Way, Glendale, Calif.

The method consists of a "package" which offers to small cooling towers, evaporative condensers, and cooling water systems in general, a complete treatment of the type available for large systems, according to the company.

It involves the use of five "packaged" items: "(1) a pre-treater chamber-holder, (2) a stick form of a balanced chemical mixture of the highest available polyphosphate content together with a safe acid, (3) a definite 'bleed' rate controller, (4) a safe, scale-dissolving system cleaner, and (5) a simple test-kit for checking pH, phosphate residuals, and dissolved solid concentrates.

"The pre-treater is a corrosion-resistant, plastic chamber which when used with a chemical stick provides automatic pH control, along with optimum operation and maintenance, for even the smallest cooling water system. The pre-treater is actuated by the discharge, at a predetermined level, of a measured amount of make-up water in which has been dissolved an accurately proportioned amount of chemical mixture."

Compactness Is Feature of Refrigerator-Freezer

● Measuring 67 in. high by 33¾ in. wide, an all-new 18.8-cu ft G-E "Spacemaker" refrigerator-freezer will fit into the same space as G-E's 10-cu ft model NH-10 of a decade ago, according to General Electric Co., Household Refrigerator Dept., Dept. AH&RN, Appliance Park, Louisville 1, Ky.

A new "Thin-Wall" foamed polyurethane insulation, refrigerant-filled, is used to achieve the 88% additional net storage volume in the same space as yesterday's 10-cu ft model, it was stated. The insulation, together with other storage space gains made in the last 10 years through design and engineering improvements, account for the sizeable increase in capacity. New Spacemaker never needs defrosting.

Will Mass Produce Low-Cost Room Unit

● Carrier Air Conditioning Co., Dept. AH&RN, Syracuse 1, N. Y., announced that it will mass produce a new low-cost room air conditioner in addition to its four major 1961 lines.

Called the "Cavalier," the new 230-volt unit delivers 9,600 Btuh, the company said. It is 14 in. deep, 16 in. high, and 26½ in. wide. A single airflow control permits air to be directed straight into a room or upward for draftless circulation, it was stated.

"Zinc-coated steel parts, liberal use of copper and aluminum, and baked enamel finishes make the unit extremely rustproof," Carrier said. "Quiet operation is achieved by an advanced new radiax fan, resilient rubber fan mountings, and internal blanketing with glass fiber insulation. The unit can easily be taken from the window without removing the sealed-in mounting cradle."

Low-Cost Unit Cleans Furnaces, Boilers

● A new low-cost vacuum cleaner line for the cleaning of domestic furnaces and boilers has been announced by The Kent Co., Inc., Dept. AH&RN, Rome, N. Y.

The new Comet series vacuums provide "customized design" to permit matching of power unit, tank, mounting, and special options to meet exact job requirements for furnace and boiler cleaning, according to the manufacturer.

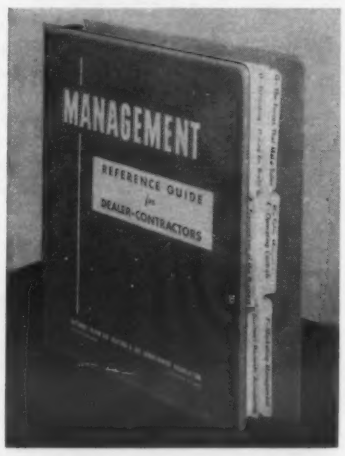
"Motor head assembly may be attached or removed in seconds, is equipped with ¾-hp motor either of by-pass or non by-pass design," it was pointed out. "For wet work, an integral water shut-off assembly is provided. Three tank sizes—7, 9, and 12 gal.—are offered, providing recoverable capacities of 3-gal. liquid (½ bu. dry material), 5-gal. liquid (⅔ bu. dry material), 7-gal. liquid (1 bu. dry material)."

Defrost Heating Elements

● Tubular defrost heating elements for commercial and domestic refrigeration installations where frost accumulations must be removed periodically are being offered by Heatrex, Inc., Dept. AH&RN, 1292 South Main St., Meadville, Pa., manufacturer of a wide variety of heating elements.

The defrost heaters also may be used on railroad refrigerated cars, refrigerated trucks, for environmental testing of metal, food, and bio-chemistry items, for melting snow accumulation on roofs, and for deicing gutters.

MANAGEMENT GUIDE
for
DEALER-CONTRACTORS



Only by proper management can the dealer-contractor in the air conditioning and heating business today be assured of making a worthwhile profit. This book shows you exactly what has to be done and, more important, how to do it.

This Guide is not simply one expert's ideas for solving problems of management and profit. Instead, it represents the combined thinking and efforts of many manufacturers, wholesalers, and dealer-contractors themselves.

Methods and suggestions offered in this book are based on actual experiences of dealer-contractors. These ideas have produced profits for others. They'll do the same for you.

120 pages, 8½ x 11, 96 illustrations, $18

The Management Guide has been prepared in loose-leaf binder form for your convenience. This lets you easily file additional material under the proper subject heading so all the information will be at your fingertips. There are eight sections in the Guide:

A—Functions of the Business—Duties of Management
B—Transactions of the Business
C—Business Records—Accounting
D—Estimating and Pricing for Profit
E—Operating Methods and Controls
F—Producing Sales and Income (Marketing Management)
G—The Forces that Make Sales
H—Sales Management

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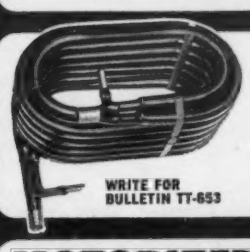
AIRVEC
The completely silent Air Cooled Condenser
Never needs cleaning

WRITE FOR BULLETIN AV-4



WRITE FOR BULLETIN TT-653

WATER COOLED **COAXIAL CONDENSERS**
Domestic and sea water models
Reduce costs 40% . . . Reduce condenser water 35% . . . Reduce refrigerant charge . . . Stabilize capillary performance . . . Compact shapes.

MOTORIZED VALVES
For chilled water cooling systems and for heating systems . . . 100% positive shut-off . . . Compact . . . Low cost . . . Low Voltage . . . No current draw when open.

WRITE FOR BULLETIN MV-1

EDWARDS ENGINEERING CORP.
938-24 Alexander Ave., Pompton Plains, N. J.
TEmple 5-2808

"One of the nation's largest manufacturers of Residential and Commercial Boilers, Baseboard and Steel-Fin Radiation, Motorized Valves, Air and Water-Cooled Refrigerant Condensers."

ARE you in need of a "just right" man to fill a slot in your organization—the man you are looking for will be reading the

NEWS' CLASSIFIED ADS

SANI-SHAKE SANI-SERV

Just like money in the bank!

General Equipment's line of automatic milk shake and soft ice cream machines and broilers moves fast to make you more profits.

You can count on this because General Equipment's line is the most complete in the industry, giving you more models for complete coverage of your market. Among the more than 70 offered are single heads, twin heads, counter models, floor models, self contained and remote units. With this line you can meet any customer requirement!

General Equipment's Sani-Serv, Sani-Shake line is pre-sold through national advertising and General Equipment adds to your selling power with exclusive merchandising aids and plans that blueprint your success.

General Equipment's line is the only line in the industry offering a LIFETIME GUARANTEE on the evaporator of all models, an exclusive user benefit that sets this equipment apart from all others in high quality standards. Service is minimized because quality is stressed!

General Equipment arms you price wise to meet-and-beat competition from all quarters. With General Equipment you get it all—product quality, competitive price, selling help, the industry's most complete line. It's just like money in the bank!

GENERAL EQUIPMENT MFG. & SALES, INC.
1348-54 Stadium Drive
Indianapolis 7, Ind.

It Takes Only 3 Seconds To Tear Out This Coupon!

Send complete information on a dealer franchise for the General Equipment Line.

NAME_____

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Mail to: GENERAL EQUIPMENT MFG. & SALES, INC.
1348-54 Stadium Drive, Indianapolis 7, Ind.

Mark IV Solves '61 Corvair Problem with Reverse Rotation Compressor, Faster Fan

IN ENGINE compartment, Mark IV condenser is mounted on compartment top so all air passes through it. To make room for reverse rotation compressor, spare wheel was moved to luggage compartment.

STICK SHIFT Corvairs use an evaporator under the rear package shelf similar to the installation Mark IV has been using on Thunderbirds.

UNDER DASH "Sportsman" evaporator, designed especially for compact cars, is used with automatic transmission Corvairs.

DALLAS—A solution to the problems of air conditioning the 1961 Corvair with its rear engine has been worked out by the John E. Mitchell Co. here.

Tests in the Modine Mfg. Co. wind tunnel indicate that even after long periods of operation at slow speeds and idle, under most severe conditions, engine temperatures stabilize below the warning light temperature and pull down in the passenger compartment is excellent and fast, the company said.

The "Mark IV" installation uses a reverse rotation compressor, steps up the speed of the fan and seals off the engine compartment in such a way that all air entering the compartment flows over the condenser. Condenser is mounted on the engine compartment top.

No additional fan, with its power drain, is required, the company claims. No louvers need be cut.

For automatic transmission Corvairs either Mark IV's "Sportsman" evaporator or a special rear package shelf installation can be used. Only the latter fits the stick shift models.

The Sportsman evaporator is built especially for compact cars, Donald F. Mitchell, vice president for sales, declared.

Its size permits greater leg room in small cars. The stationary "depth flow" louver affords more efficient direction of cold air to the back seat, he said.

Squirrel cage blowers move up to 240 cfm, adequate for compacts but not sufficient for larger cars.

Mitchell added that the company has improved its trunk unit for 1961 and also offers a deluxe "Monitor" unit and a "Commuter" economy model.

The trunk unit, "designed for even cooling rather than quick direct draft," provides more capacity than dash units because of its larger size. Air enters the passenger compartment through two black "Implex" ducts which distribute cool air evenly through square directional louvers. The square, cross-section construction of the ducts give them exceptional sturdiness, Mitchell asserted.

Auto Cooling Center Opens In Kansas City

KANSAS CITY, Kan.—Opening of Automotive Air Conditioning Center at 2932 Troost was announced recently.

The center will be operated as a partnership by Robert J. Craren, Jr., of Shawnee, Kan., and Warren Dawkins of Oklahoma City.

Craren formerly was branch manager of Novi Sales & Service Co., Inc., which operated at the same address. Dawkins owns and operates the Automotive Air Conditioning Center in Oklahoma City.

WITCO SEALERS FOR
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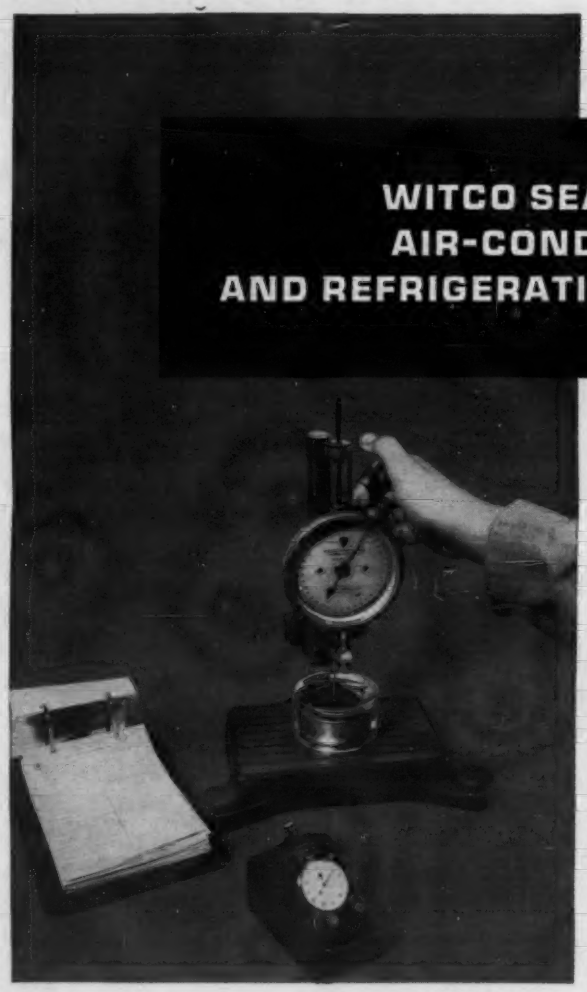
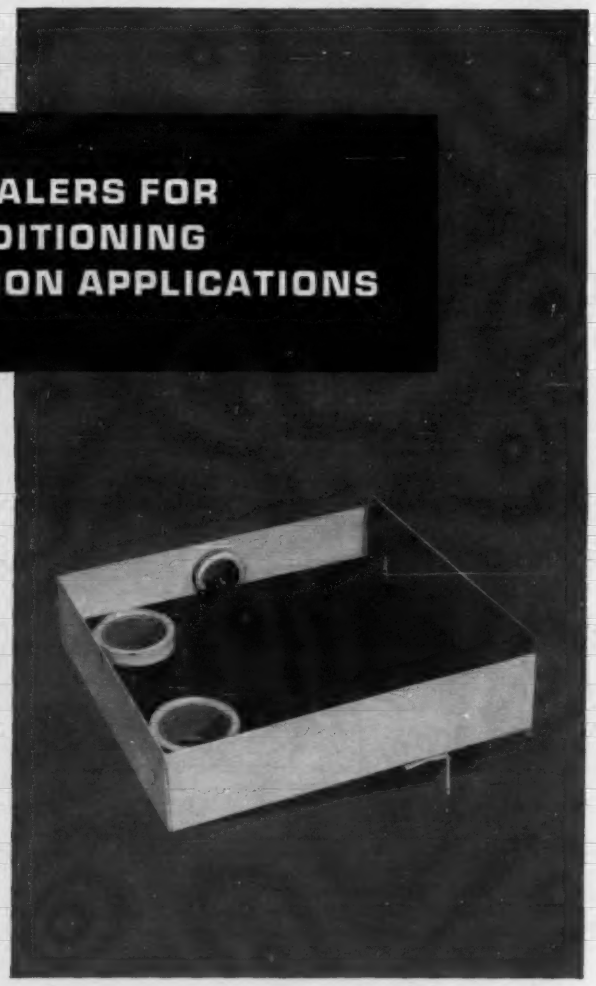
AND REFRIGERATION APPLICATIONS



Careful testing of all Witco products means uniformity and high quality for you. Here, a lab technician checks a sealer with a penetrometer. This and many other tests check every characteristic that is vital to performance. Every sealer shipped must meet Witco's high standards and perform faultlessly for you.



Witco's sealers and vapor barriers are specially designed for air-conditioning and refrigerating applications. Good flexibility and excellent adhesion are exhibited over a wide temperature range (from below freezing to abnormally hot temperatures). Formulations to meet special application requirements are manufactured to customer order.

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Pioneer 14442 is a hot-applied sealer with odor level and moisture resistance that make it ideal for refrigerators, freezers, food-vending machines and water coolers. Pioneer 2205 also can be used in these applications. It is a high-melting-point sealer and retains high cold flow and flexibility at low freezing temperatures; it also assures good adhesion and excellent sealability.

The big reasons behind Witco Products' superiority are research and quality control. Every Witco Product is produced under the kind of strict laboratory quality control that assures uniformly high performance from shipment to shipment, year to year.

Witco's research laboratories and technicians not only develop new and improved products, but are available to help you with special problems. Write or call the nearest Witco sales office listed below for further information about these products and for information on sealers for other specialty applications.

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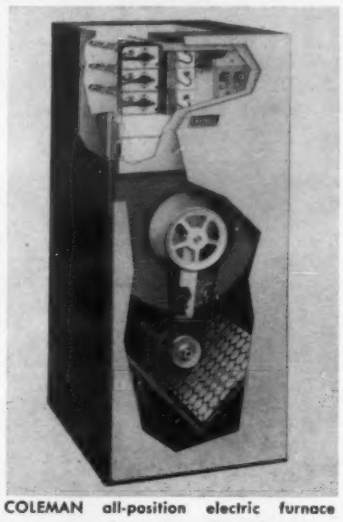
Blower Mounting Allows Rotation Of New Coleman Electric Furnace

WICHITA, Kan.—The Coleman Co. here is introducing a new all-electric furnace in 15, 20, and 25 kw sizes. Heating capacities range from 42,000 to 93,300 Btuh.

"All models may be installed with conventional or small-pipe systems," the company said. "Blower capacities are ample for use with remote-type air conditioning units.

"An exclusive feature is a blower mounting that permits the furnace to be rotated and operated through 360°. Thus, the unit is positionable for horizontal-flow (left or right), down-flow or up-flow air delivery. No mechanical adjustments are necessary.



COLEMAN all-position electric furnace uses drawer-type elements.

"Heating elements in increments of 5 kw are drawer-type with individual controls. An automatic sequencer adjusts heat input to heat demand. When heating demand is satisfied, the sequencer drops out heating stages, one at a time. Thermostat setting determines continuous or intermittant blower operation.

"All models are equipped with heat exchangers of aluminized steel, type-A Nichrome-nickel heating elements, sound-conditioned belts and blowers, and V-type filters. No chimney or flue connections are necessary."

Dimensions of all units are: height, 47¼ in.; width, 24 in.; and depth, 20 in. Finish is medallion gray baked enamel.

Giants Keep Hopeful Minor Leaguers Cool When Off Diamond

CASA GRANDE, Ariz.—The San Francisco Giants are trying to develop the hottest farm teams in baseball by keeping the players cool in spring training.

L. H. Bell & Associates, engineers and architects, have designed and are presently supervising construction of completely air conditioned facilities for some 300 minor league baseball players on a 640-acre site 4½ miles west of Casa Grande, 40 miles from where the parent club trains for the National League season.

A 150-ton Carrier absorption refrigerating machine will send chilled water through underground pipes to air handling units in the camp's administration building and its four dormitories.

"Plenty of sunshine helps ballplayers get in shape rapidly," says Giants Trainer Frank Bowman, "but too much heat off the field is tiring."

The facility was designed as a training camp from March 1 to May 1 and as a motel-convention center during the remainder of the year.

McQuay Declares Dividend

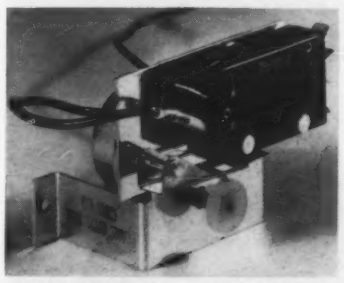
MINNEAPOLIS — Directors of McQuay, Inc. have declared the regular quarterly dividend of 12½ cents a share on the company's 418,932 shares of common stock.

Carrier 'Time Guard' Prevents Rapid Cycling, Starts Condenser Fan Motor Ahead of Compressor

SYRACUSE, N. Y. — A new control circuit which is said to prevent rapid cycling of compressors has been perfected by Carrier Air Conditioning Co.

Called the "Time Guard," the control is now being installed on all residential cooling equipment up to 3 tons of capacity and on the 10-ton heat pump.

"Designed to reduce nuisance calls to dealers and prolong compressor life, the timer starts the condenser fan motor 15 seconds before the compressor starts," Carrier explained.



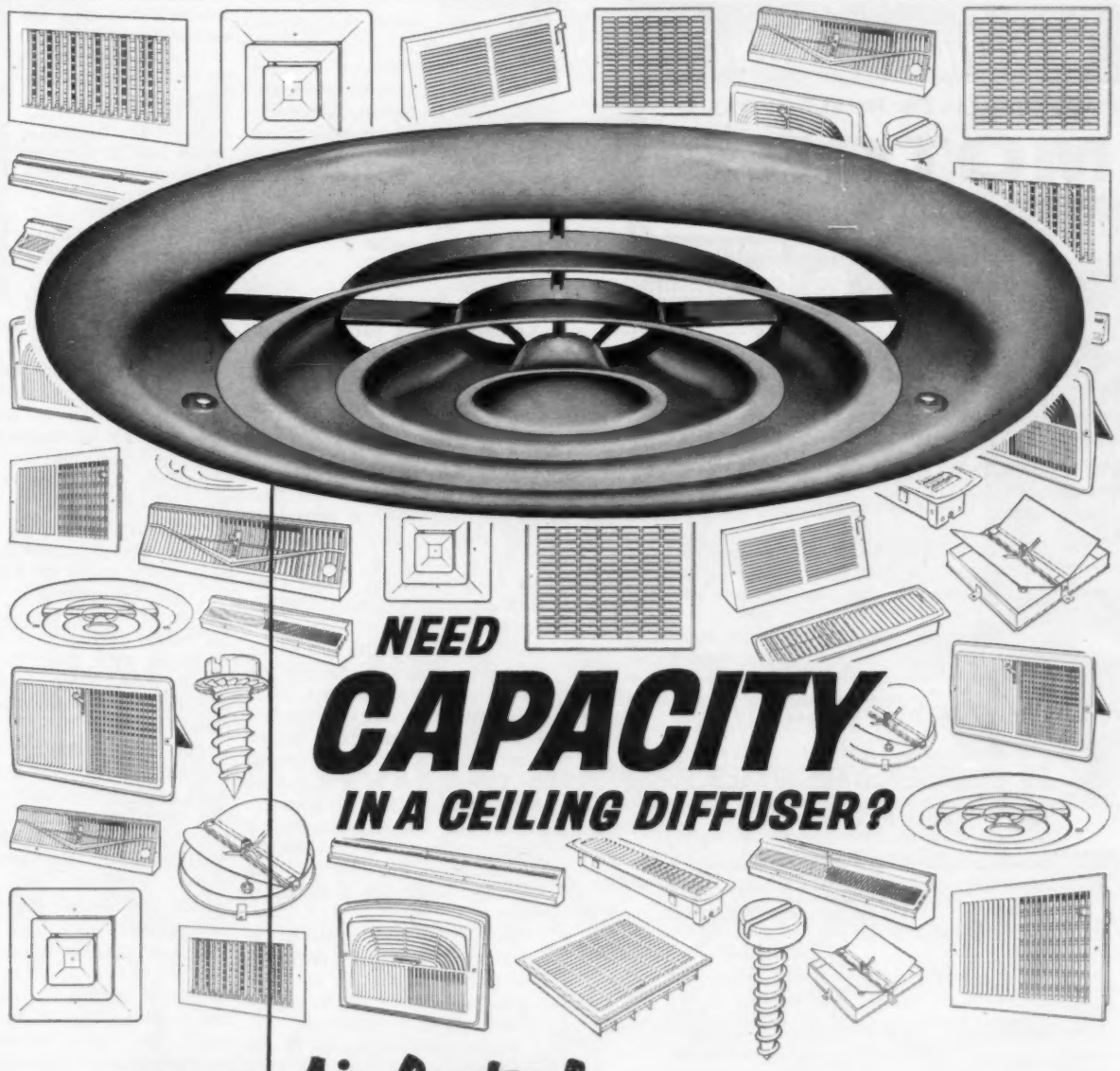
MOTOR DRIVEN switch starts condenser fan 15 seconds before compressor. Plastic wheel at bottom must revolve 360°, taking five minutes, before compressor can be restarted.

"This removes residual heat from the condenser and reduces head pressure during start-up. When the compressor stops for any reason, the timer prevents its restarting for five minutes."

In starting, a compressor motor draws up to four times as much current as it does in normal operation, it was noted. According to William McGrath, chief engineer of Carrier Air Conditioning, rapid cycling puts heavy wear on the compressor motor and is a leading cause of motor burnout. He said the Time Guard will be added to other Carrier packaged equipment as models are redesigned.

"Compressor cycling can be caused by plugged filters which reduce air flow across the evaporator coil, a refrigerant leak, a burned out fan motor on either condenser or evaporator side, a defective thermostat, either electric or heat overload, or by unusual, non-recurring combinations of temperature, humidity, and electrical connections," it was pointed out.

"The Time Guard reduces noise, light flicker, and blown fuses as well as compressor motor wear and starter point burning.



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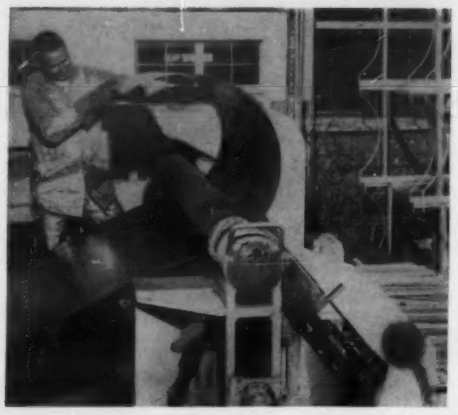
Profile of Success

$50 Parlayed Into Multi-Million Dollar Heating and Air Conditioning Business (2)



PRESSLY has found it economical to manufacture its own residential oil storage tanks. The one man operation produces some 20 tanks a day.

Editor's Note: First instalment of this article related story of how J. C. Pressly started this St. Petersburg, Fla. heating and air conditioning firm with only $50 by buying out a sheet metal contractor. This instalment continues with some of the details of his operation of the present multi-million dollar contracting firm.

"On a typical job our lead comes to us over the phone," Pressly states. "It's then assigned to one of our six salesmen—men who have all had experience in the shop and are familiar with every phase of the heating and air conditioning business.

"In a residential installation, our salesmen will size the equipment themselves. It then goes to the engineering department, then to layout. After city engineers have approved it, our installation department sends out a layout engineer and a mechanical engineer to make any last minute changes that might be required right on the job site."

Moveable Bin System Collects Parts for Delivery to Job

One of Pressly's most successful innovations has been the moveable bin system. When a material order for a particular job is given to the stockroom, all prefabricated parts for that job are kept in a moveable metal cart. These carts then move in the plant from one area to another, at which time ducts, register boxes, and other materials are loaded.

When all the materials which are required for a particular job are gathered on the cart, it is loaded intact on one of Pressly's 26 Volkswagen delivery trucks by means of a special hydraulic lift. Thus, a job is sent out as a whole, rather than piecemeal.

After the job is completed, a Pressly representative calls on the customer, inspects the job, and asks if the job is satisfactory.

"Our whole operation is changing," Pressly remarks. "We buy as much as we can, and make as little of the equipment we need as possible.

"As a general rule, if we need a particular item, we shop around on a quality-price basis from outside suppliers. This saves us money most of the time.

"But, during slack periods it's often advisable to just go ahead and make the item and keep our own people busy—even though it might cost slightly more.

"Ordinarily, this is because we guarantee a 40-hour week for our men, and paying $10,000-$15,000 per year for labor we don't actually need is still better than laying these men off and trying to rehire them later."

Any one of Pressly's crews is capable of installing any piece of equipment from start to finish. In practice, four or five crews may work interchangeably on the same job.

"With materials and labor costs going up constantly, the only way for a company our size to stay in business is to find the most efficient way of installing the equipment we sell," Pressly says.

"Actually, we are not so concerned about trimming down man-hours spent on the job as we are in planning the job efficiently in the first place. It's far better to design a job right to begin with than to have to spend more time on the job site making up for poor planning."

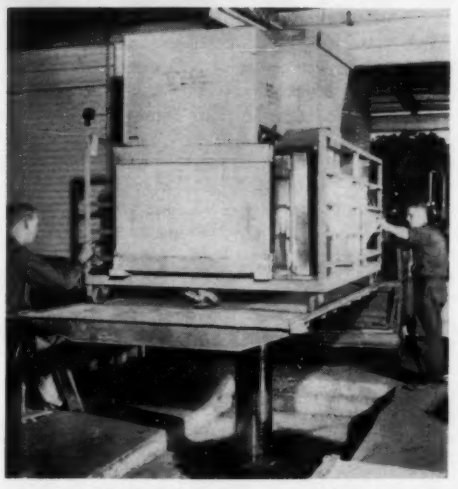
The responsibility for this evolves on almost the entire staff. By techniques such as the moveable carts, valuable minutes are saved, which, when multiplied by the number of crews working on projects, means improved efficiency in our operation.

A new plan in which all mechanic's tools stay in Pressly trucks is saving ten minutes in the morning and 15 minutes at night. All tools are locked in equipment compartments rather than being loaded and unloaded.

"In this highly competitive field," Pressly states, "it's the saving in these little bits and pieces of time which contribute so much to our success.

(The End)

QUALITY heating and air conditioning equipment inventories are maintained by Pressly in a warehouse containing some 18,000 sq ft of storage space.



One of Pressly's successful innovations has been complete unit delivery of all equipment needed for an installation. Everything is loaded on a specially designed rolling bin and rolled intact on one of Pressly's 26 Volkswagen delivery trucks by means of a special hydraulic lift.

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AIR CONDITIONING, HEATING & REFRIGERATION NEWS
450 W. Fort St. Detroit 26, Michigan

Electrically Operated Solenoid Valves (3)

(Selection and Application)

By Clifford Bastle, Project Engineer,
Refrigeration Section, Controls Co. of America

CONTROL SELECTION

The following performance characteristics are to be considered when selecting a solenoid valve for application: Capacity; M.O.P.D.; electrical rating; seat leak; and special features.

Select a valve that meets the required capacity. Additional costs or restricted flow are involved when a valve is improperly selected.

The M.O.P.D. should be the extreme pressure difference that the valve will operate against and not an average value. Valve failing to open due to occasional excessive pressures causes a constant "in-rush" current, and consequently, coil "burn-outs."

Choose a valve with the proper voltage and frequency rating.

Installation in communities where the voltage varies beyond the rated electrical input limits of the coil will result in valve failure. When the voltage is too high, the coil will eventually burn out due to excessive draw. The valve may fail to open when the voltage is too low and again cause the coil to burn out, due to the in-rush current.

It is advantageous to select a "metal to metal" seat valve when a seat leak is permissible.

Soft seat valves are not as dependable throughout the life span due to the resilient property of the seat material. Continuous operations eventually cause an impression or set in the seating material conforming to the seating surface, that could lead to excessive seat leak.

A "metal to metal" seat has a minimum amount of wear and is uniform. This type has an inherent property of maintaining a constant or decrease in seat leak with life.

Foreign particles on the seating surface will cause excessive seat leak and sometimes are mistaken for a seat breakdown.

Fitting sizes, metering, materials of construction and any other special features are also to be considered when selecting a valve for a particular application.

TYPICAL APPLICATIONS

Typical refrigeration and air conditioning applications for electrically operated solenoid valves are: Liquid and suction line stop, hot gas defrost condenser water regulation, two temperature, and industrial applications controlling flow of non-corrosive gases and liquids.

When employed as liquid line and suction line stop valves, solenoids may be wired electrically in multiple with the condensing unit motor or operated by a thermostat.

A liquid line solenoid controlled by a thermostat will close when the refrigeration requirement has been satisfied, with the condensing unit continuing to operate and pump down to the cut-out point of the low pressure switch. Partial pump out or pump down of the evaporator coil is thus affected at the end of each operating phase of the equipment.

When the thermostat again calls for refrigeration, the solenoid will open and liquid will be fed to the thermostatic expansion valve, which will be open due to the partial pumped down condition.

Suction pressure will then quickly rise to the cut-in point of the low pressure switch (pressurestat).

Suction line stop valves thermostatically controlled will operate in a similar manner.

Solenoid valves are extensively used on hot gas defrosting systems to control the by-pass of hot gas from the compressor discharge to the evaporator inlet. The defrosting cycle can be initiated and terminated by a timing mechanism or a thermostatic switch.

Solenoid valves in the water lines of a water-cooled condenser act as stop valves and not as devices to regulate the flow of water according to machine requirements.

Solenoids are frequently employed with proper type thermostats in two-temperature multiple evaporator systems. The solenoid valve may be installed in either the liquid or suction line of the higher temperature evaporator with the controlling thermostat installed in the evaporator proper.

Closer control of evaporator temperature is generally obtained when the solenoid is installed at the evaporator outlet as closing of the stop valve will prevent further refrigeration as the condensing unit continues to operate to satisfy the lower temperature evaporator. A low pressure type motor control (automatic switch) must be employed to cycle the condensing unit, the pressurestat being set for proper control of the lower temperature evaporator.

Solenoids serve many purposes in industrial applications controlling oil, water, and air. They are also used on vending equipment controlling syrup and hot and cold water.

While this article primarily discussed normally-closed stop valves, these same principles apply to normally open, three-way, and four-way solenoid valves.

(The End)

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Wolverine Names E. W. Ervasti

ALLEN PARK, Mich.—E. W. Ervasti has been appointed to the newly-formed post of assistant director of marketing for Wolverine Tube, Div. of Calumet & Hecla, Inc.

E. W. Ervasti

In making the announcement, J. M. Dumser, director of marketing, indicated that the new administrative post has been created to assist in the coordination of the company's broadened marketing program.

Ervasti began his career with Wolverine Tube in 1934 and since has worked in operational and marketing capacities. In 1957 he was promoted from manager of industrial sales of the American division to general sales manager for Canada.

G-E Offers Finance Plan for Leak Detector

WEST LYNN, Mass.—A new finance plan has been initiated by General Electric Co. to help refrigeration and air conditioning equipment servicing organizations and independent servicemen purchase its new H-6 Leak Detector.

"Under the 'Pay As You Profit' finance plan, purchasers will be able to buy the H-6 Leak Detector after a small down payment," it was stated. "Remaining payments can be spread over a 12-month period."

General Electric's Instrument Dept., West Lynn, and the General Electric Credit Corp. are cooperating on the program.

Philadelphia Firm To Rebuild Compressors

PHILADELPHIA — Hermetics, Inc., has been established at 6122 N. 21st here to rebuild hermetic, semi-hermetic, and open-type compressors and motors, according to Harry M. Yarrow, vice president.

Yarrow said the firm has set up a large shop and is equipped to give manufacturers, dealers, and service organizations "quick and reliable service." He added that the company guarantees all its work, "since our policy dictates that we use only manufacturer's authorized parts in our replacements."

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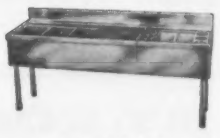

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TECH CENTER

by

FRANK J. VERSAGI

Gas Utilities Sell, Service, and Subsidize Air Conditioning (1)

Reacting to the threat of the all-electric home, which would preclude the running of any gas line at all to the house, the gas utilities are taking an aggressive and active role in the growth of gas air conditioning. Most gas companies reflect the position voiced by their association, the American Gas Association, but there are a few reluctant participators in the push for gas-fired equipment. This article summarizes the many faceted utility opinion and activity.

A single 3-ton absorption gas air conditioner consumes as much gas as 25 gas ranges or 23 refrigerators or 17 water heaters.

In a five-month period a house without gas air conditioning consumed 12.55 million cu ft of gas; the same house with air conditioning used 223.3 mcf for a comparable five-month period.

Such facts as these, of course, are fundamental to the immense utility activity on behalf of gas air conditioning. One midwestern utility manager states frankly, "The gas air conditioner manufacturers should and will get support from the gas utility, because the addition of a gas air conditioner in the summer will not only increase the gas utility revenue, but protect the heating load as well."

It is both a source of hope and irritation to gas people that, in most areas of the country, gas *heating* has an 80 to 90% saturation.

The hope is that such places are natural prospects for summer cooling with gas; the irritation is that 70 to 85% of electrical central cooling going into residences is going into homes with gas heating. It is for this latter reason that so many utilities welcomed the addition of the Bryant absorption unit to the market; it gives them the opportunity to go after the add-on market which was not possible with the original Arkla Sun Valley. And now Arkla is beginning production of add-on and remote equipment.

Utilities Selling Air Conditioning Wherever Permitted

In most of those states where utilities are permitted to merchandise, the gas people are selling, servicing, or subsidizing gas air conditioners. Where they are not allowed to merchandise, utilities all but write up the order for the factory representative or the dealer; they usually provide free service for the first year and inexpensive contract service after that. One utility spends an average of $125 on each unit in "promotion and direct help."

East Ohio Gas Co. of Cleveland, for example, which has 480 Arkla and Bryant gas air conditioning installations on its lines (total tonnage 2,016), normally pays for shipment and placement of the unit and for the ductwork on an Arkla unit or the plumbing on a Bryant conditioner. Working with builders, EOG will install a gas air conditioner in a model home and leave it free for one year or until the house is sold. "This particular type of promotion has led to many sales," according to Kenneth Hawks, EOG commercial sales manager who handles all gas air conditioning for the utility.

EOG Expects To Sell 450 Units In 1961

Hawks expects to sell 450 Bryant and Arkla units in 1961. Already on their lines are some 300 Arkla conditioners, 20 Bryants, 25 Arkla 25-ton chillers, 20 Carrier absorption units, one Trane absorption machine, and one York steam turbine centrifugal.

Of the residential-size units, 60% went in small commercial applications.

As is the case in other cities, EOG acts as the distributor for Arkla units, but Bryant works primarily through its existing distribution. Both companies cooperate closely with the utility in the over-all promotion of gas air conditioning.

"We have no competition except for the very cheapest of air conditioning equipment," feels E. F. Davis, general sales manager of Chattanooga Gas Co. "We sell, install, and service Arkla-Servel units; our service is free." Davis, who already has 175 units on his lines, predicts the sale of 200 per year or more from here on.

Any list of the top merchandising gas utilities is almost sure to begin with Lone Star Gas Co. of Dallas. The company has on its lines more than 4,700 residential, commercial, and industrial gas air conditioners with a total tonnage of more than 79,000. In the residential category are 2,952 installations of 3 and 5-ton absorption units, 25-ton chillers, and engines ranging from 15 to 75 tons. Gas-fired air conditioners are reported to have added an estimated $1 million dollars to the company's summer revenue in 1959.

A midwest utility has some 1,600 absorption and gas engine-driven units on its lines—49% residential, 51% commercial. The company anticipated a 50% increase in sales in 1960 over 1959 in small commercial and residential units. "Acceptance of the Bryant unit is passing our highest expectations," says the air conditioning manager of this company. "When Arkla gets its remote 3 and 5-ton units on the market, and if both Bryant's and Arkla's pricing can be made more competitive with electric competition, the gas industry will get an even break in the air conditioning market."

This manager was not the first to bring up the matter of price in discussions with the NEWS. Some utilities are not pushing gas air conditioning at all. A couple had "some promotional efforts in the works ready to go at any time now." The efforts were still in the works when the NEWS called back several months later. The lack of enthusiasm was most frequently attributed to the dislike or "impossibility" of selling against a rather significant first cost disadvantage.

It became obvious to the NEWS that industry-sponsored sales arguments of longer life, lower operating costs, quieter operation had not convinced some utilities that they should expend any effort in attempting to sell the smaller air conditioning units. Some of these same companies aggressively search out customers for the big stuff—Carrier, York, and Trane absorption units.

(To Be Continued)

Peirce-Phelps To Cover Wider Area for Carrier

SYRACUSE, N. Y. — Carrier Air Conditioning Co. announced it has extended the franchise of its Philadelphia distributor, Peirce-Phelps, Inc., to include south and central New Jersey and the Harrisburg, Pa. area.

The Philadelphia firm has established warehouse facilities and a branch office at 25 S. 10th St., Harrisburg. R. C. Calden will be manager of the new office.

Dealers in the southern New Jersey counties were previously served by A. A. Duckett, former Camden, N. J., distributor, who is now operating an expanded Carrier distributorship in Boston.

Knowles Heads Trane's Chicago Sales Office

LA CROSSE, Wis.—Robert S. Knowles has been named manager of the Chicago sales office of The Trane Co., according to W. D. Graham, vice president.

Knowles' promotion follows the retirement of Gerald F. Mannion and Charles McCann who managed the Chicago office for 28 years. Knowles was formerly manager of the Greenville, S. C. sales office, according to the announcement.

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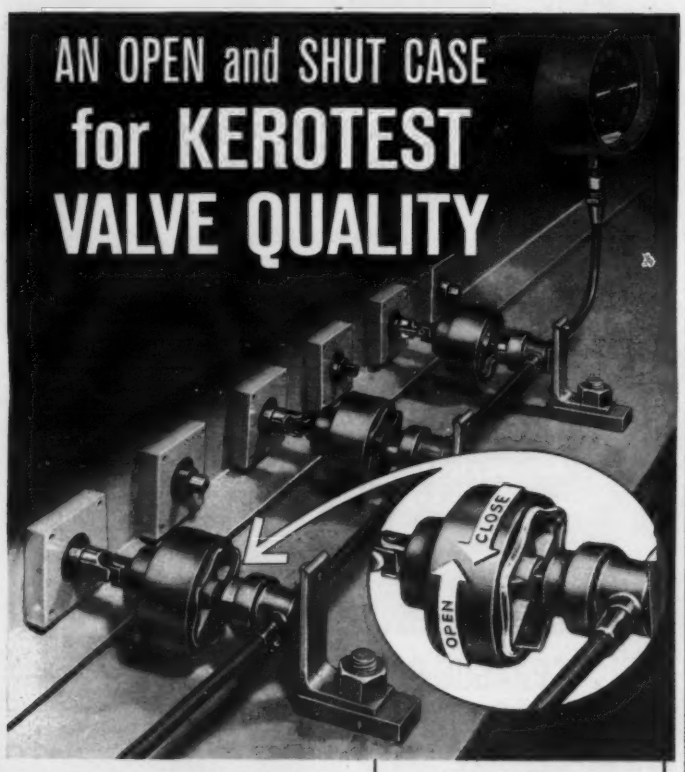

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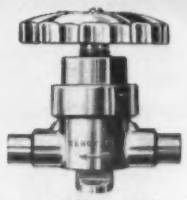

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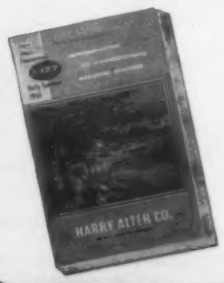

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High Side Pressures

In Automotive Air Conditioning

By Edd Huff, National Service Manager,
Mark IV Div., John E. Mitchell Co.

Under normal operating conditions using Refrigerant-12, a commercial air conditioning unit with air-cooled condenser will have a condensing temperature 30° to 35°F higher than the temperature of the air entering the condenser. This temperature differential is based on a suction gas temperature of 10° to 20°. Lower suction, of course, will result in lower head pressures while higher suction pressures will result in higher head pressures and temperatures.

Fig. 1 shows the discharge or high side pressure curve for such a commercial application, from 60° ambient through 100°.

A talk given at the 7th annual automotive air conditioning forum sponsored by the Texas Section, Society of Automotive Engineers, in conjunction with the Automotive Air Conditioning Association.

Referring to Fig. 2, it can be seen that high side pressures in an operating automobile air conditioning system differ considerably from those of commercial applications.

Based on a condenser inlet air temperature of 95°F, at idling speeds of approximately 450 engine rpm, the system head pressure is 200 psig. At a speed of 10 mph, the operating head pressure is reduced to approximately 185 psig. Following the curve to an indicated speed of 20 mph, we find the head pressure continues to decrease. From 20 mph through 60 mph, the decrease in operating head pressure is very slight. At the higher speed, we have a head pressure of 162.5 psig.

In automotive air conditioning, there is a direct connection between condensing pressures and the automobile cooling system, under idling or low speed (10 mph or under) operation. Therefore, any discussion of high side or discharge pressure temperature must include the cooling system.

Since the condenser must be located forward of the radiator and heat removed from the car interior is rejected through it, the question is immediately raised: what happens to engine cooling system performance? The complete answer would, of necessity, become rather involved.

Let's start with a list of some of the things that affect both the air conditioning unit and the auto cooling system operation.

1. Engine rpm.
2. The forward speed of the car as it affects condenser and radiator ram air.
3. Speed and wind direction.
4. Temperature and atmospheric pressure.
5. Relative humidity.
6. Number of passengers.
7. Size of passenger compartment.
8. Position and intensity of sun.
9. Variations in sunlight and shade.
10. Color of car, tinted glass, use of sun visors.

We know the engine fan is depended upon to draw air through both the condenser and radiator at slow speeds and when the auto is stationary.

As stated previously, heat removed from the car interior must be rejected through the condenser. Some of this heat is drawn through the radiator by the engine fan. Actually, this condenser heat amounts to only 5,000 or 6,000 Btu at idling speeds. The engine cooling fan moves approximately 450 cfm across the radiator, again at idling speed. This means, at 90° ambient, that an approximate increase of air entering the radiator of 14° would result. Thus, we would have an air temperature entering the radiator of 104°.

The longer the auto is operated at idling or very slow speeds, under 10-15 mph, the higher the cooling system temperature and to a lesser degree the condenser temperature.

With this condition comes higher discharge and suction temperatures, due to reduced compressor capacity. Thus we find a vicious cycle in effect; i.e. rapidly increasing engine cooling temperatures and a slower but nevertheless steady increase in condensing or head pressures.

Increased coolant temperatures and refrigerant pressures cause high compressor torque, with possible engine stoppage as well as a reduction in compressor drive belt life through belt slippage.

If continued for 20 to 30 minutes, boiling of the engine coolant will very likely result and some of this coolant will be released by the radiator pressure cap and discharged through the radiator overflow tube.

As soon as the auto's forward speed is resumed, ram air in addition to that drawn in by the engine fan, causes both the condensing and cooling system temperatures to decrease.

Aside from the preceding discussion, what are some other causes of higher than normal head pressures?

Probably the most common in our experience would be an overcharge of refrigerant or air in the system. This would be closely followed by clogging of the condenser with dirt, insects, and leaves.

Commercial Air Conditioning Unit
(High Side Pressure—Air-Cooled Condenser)

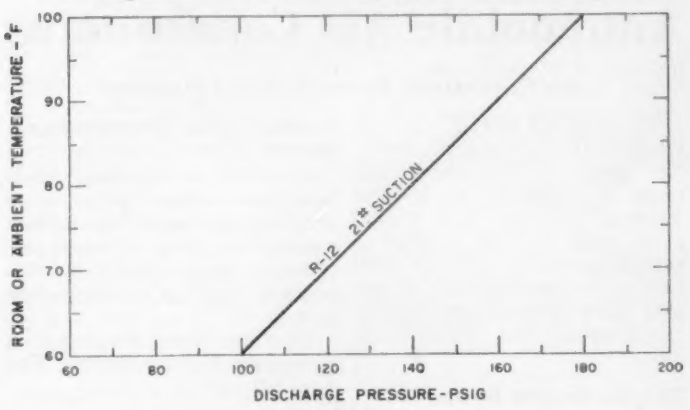
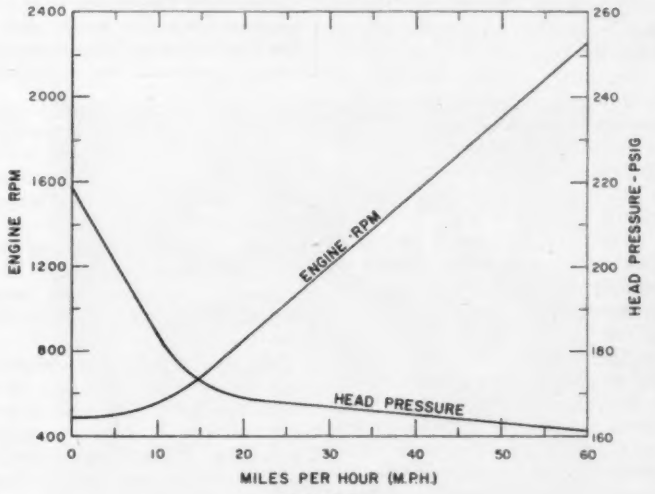


FIGURE 1

Auto Air Conditioning System
(Ambient Air Temperature—95°F)



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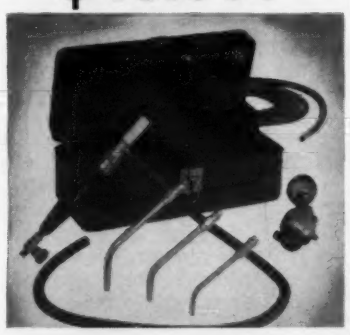

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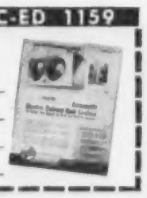

Problems and Methods of Controlling Automobile Air Conditioning Systems

By C. D. Orth, Controls Co. of America

The compact size of auto air conditioning units and the variable speed of the compressor make it necessary to provide controls to accomplish results other than just the control of refrigerant to the coil. In addition to the thermostatic expansion valve, controls are required to accomplish the following results:

Special Results Required

First, some method must be provided to prevent the coil from icing up under some conditions of operation. When the car is driven fast the coil pressure may drop to a point where icing up may occur.

Secondly, some method of modulating the capacity of the system must be employed. Too much cooling capacity may be obtained under some conditions when the car is driven at high speed.

Third, it also appears desirable to provide some means of pulling down the evaporator coil pressure quickly on initial start-up of the unit. The occupants of the car will then feel cool air quickly after starting.

Fourth, the high head pressures which are sometimes encountered when the car is idling or moving slowly through traffic must be dealt with. High head pressure can cause slippage of the compressor belts or actual stalling of the compressor.

Conditions which are controlled by the thermostatic expansion valve—

Thermostatic expansion valves have been designed which do an excellent job under the widely varying conditions of speed and pressure which occur in this unusual kind of refrigeration system.

They are often provided with a pressure limiting feature. The valves are made in such a way that they will throttle to prevent the evaporator pressure from rising above a predetermined level. This is the feature which provides the quick pull down of the coil on start up, since the valve will not open until the evaporator pressure has been pumped down to the pressure limit point.

A talk given at the 7th annual automotive air conditioning forum sponsored by the Texas Section, Society of Automotive Engineers, in conjunction with the Automotive Air Conditioning Association.

The compressor sometimes does not have adequate capacity at idle speeds to hold the evaporator at the desired pressure. The rising evaporator pressure along with the reduced air flow through the condenser causes the head pressure to build up. By providing a pressure limit in the expansion valve, the evaporator pressure is controlled, thus preventing the load on the compressor from increasing.

This has the secondary effect of preventing the head pressure from rising to an undesirable level under these conditions.

Thus, it is apparent that the thermostatic expansion valve can really serve a triple function in the system. It controls the refrigerant flow to the coil, provides quick pull-down on start-up, and overcomes the problem of high head pressure during idle and slow-speed operation.

The control of capacity and freeze-up—

The control of the system capacity and the prevention of coil freeze-up are closely tied together. This is because the control of both of these items is necessary due to the variable speed of the compressor. Usually one control is provided to take care of both of these functions. There are three (3) basic types of capacity and freeze-up control circuits being used.

Clutch Cycle System

The simplest of these is the so-called clutch cycle system. A simple thermostat, either preset or adjustable, senses the fin temperature of the evaporator coil and opens and closes the circuit to the magnetic clutch on the compressor in response to coil temperature. In this way icing of the coil is prevented.

When the adjustable type thermostat is used a degree of capacity modulation is obtainable. The compressor will be started and stopped frequently as the car speed increases and as the heat load is reduced. This system has the advantage of being quite simple, but the driving belt may have a relatively short life. Also, the occupants of the car may feel discomfort if the duration of the off cycles is too long.

Hot Gas By-Pass

The hot gas by-pass method of controlling freeze-up and capacity (Fig. 1) has been widely used by many auto air conditioner manufacturers. In this system, hot gas from the compressor discharge, or from the first or second pass of the condenser, is shunted directly to the evaporator coil or to the suction line.

The control used to regulate the hot gas by-pass can be actuated by the evaporator pressure, by a solenoid or other electrical means, or by a charged thermal element. All three (3) types of controls can be made adjustable by the use of a Boden wire, by applying manifold vacuum to the control, or, in the case of the electrical control, by the use of a rheostat or a thermostatic switch.

A control which is actuated by a thermal element may respond to suction line temperature or discharge or return air temperature.

The hot gas control must have a valve member which seals off well, because any leakage through the valve during a time when full capacity is required would result in some loss of cooling. The orifice, however, need not be very large in comparison to the orifices required in other types of flow controls to be discussed. Therefore, the control can be made fairly compact.

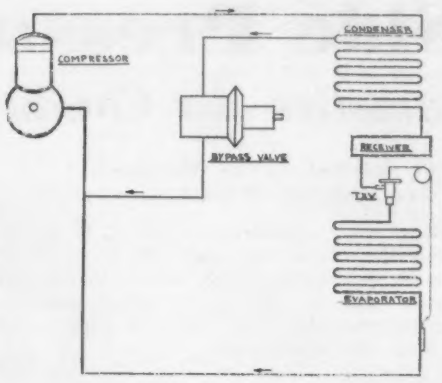

FIG. 1 — Hot Gas By-Pass System.

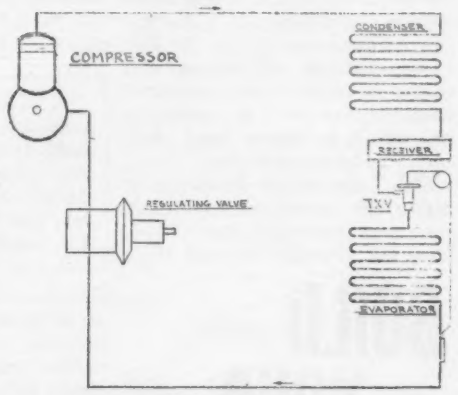

FIG. 2—Suction Line Regulation System.

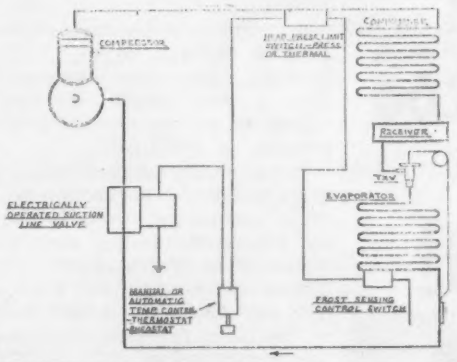

FIG. 3—Suction Line Regulation System Electrically Operated.

In the adjustable type of control, the low limit of adjustment can be set to provide the desired freeze-up protection. The driver would have the option to adjust the control upward from this setting to provide capacity modulation. In contrast to other circuits this arrangement does not provide any saving in horsepower when the system capacity is modulated. However, the by-pass method has been used very effectively to produce capacity control and freeze-up protection.

Suction Line Control

A flow control in the suction line is the third method of providing capacity modulation and freeze-up protection (Fig. 2). As in the case of the hot gas by-pass control, these suction line valves may be actuated by suction pressure, by a thermal element, or by electrical means. These controls may be made fixed or adjustable like the by-pass valve by the use of a Boden wire, by electrical means, or by engine vacuum. A manually operated suction line valve has also been used.

Since this type of control handles suction line gas and the pressure drop through the valve must be kept to a minimum, a relatively large orifice is necessary.

However, in contrast to the by-pass control, this type is normally not required to seal off tight when closed, but rather acts to modulate the flow from maximum to minimum capacity requirements.

One of the advantages of this system is that a horsepower saving is realized as the control modulates to reduce the flow. This feature indicates the possibility of allowing the compressor to run continually even when air conditioning may not be needed, thus eliminating the need for the expensive magnetic clutch usually employed.

However, there are still some problems involved in doing this and so far it has not been accomplished in practice.

In spite of the relatively large orifice required, this control has actually been made small enough to fit inside the compressor it-

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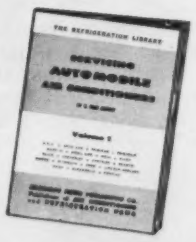

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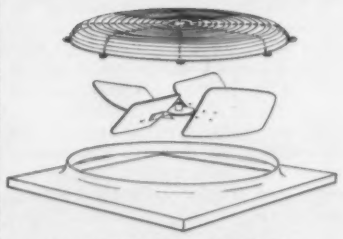

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self. Further simplification of the piping is obtained from this and the control is less expensive because it requires no outer shell or fittings.

Electrically Operated Suction Line Flow Control

An electrically operated suction line flow control (Fig. 3) which would operate from its maximum capacity to its minimum capacity in response to a thermostatic switch, appears to have some advantages over other types of capacity modulation and freeze-up controls.

This device would allow the system to operate at full capacity until freeze-up or capacity modulation was indicated, while a modulating control would start to throttle the line before the desired control point was reached due to the differential inherent in the control. The result is that with the electrical control, quicker pull down, and full system capacity would be available until the coil started to freeze-up or until the car was sufficiently cool.

This valve, being electrical, could be actuated from more than one thermostat. There is the possibility of having a thermostat to control car temperature or a thermostat responding to high condenser temperature, as well as the thermostat which would normally respond to coil temperature to prevent freeze-up.

Future designs will probably involve some sort of power take-off from the engine which will either hold the compressor speed constant or make it variable with respect to engine speed.

Auto Air Conditioning Service 1,500 Miles from the Factory

By Wm. Winkelman, General Manager,
Johnnie & Mock, Auto Service, Miami, Fla.

Service problems 1,500 miles from the factory are probably no more acute than elsewhere. Being situated so far from the factory causes one to be more analytical of the cause, since parts supply and communication lines are longer. Design and engineering problems, in relation to drive components, have disappeared to a great extent in the last few years.

Biggest Problem Is Human

The biggest problem in the field is human, and will probably always remain so. It is a never ending responsibility to constantly teach and preach good practice. From the mechanic's point of view, all he has to do is install the equipment, not always according to the manufacturers instructions, and if it does not operate satisfactorily it is the manufacturers poor design that is at fault and not his.

There is, however, a great deal of truth in his attitude. The factory has taken away all manner of opinion from the installer by providing designs, instructions and specifications for him to follow, but the factory has not gone far enough.

System overcharging and premature belt failures are the biggest field headache and will continue to be unless something is done about it. Temperatures are not arrived at by guesswork nor are manifold pressures estimated. This is factual data determined by instruments.

Rule of thumb measures are still being used for charging and belt adjustment. The usual "specification" for belt tension is a maximum of ½-in. deflection on the longest span, and in charging, a sufficient charge is reached when the sight glass clears up.

Practice has always been, when installing a new belt, to adjust by "the rule of thumb" and instructing the owner to return for readjustment. The length of time the customer was told to return was also arrived at by guesswork. If you thought the weather would become hot next week you told him to come in then, if you thought it would remain mild you might tell him next month.

A talk given at the 7th annual automotive air conditioning forum sponsored by the Texas Section, Society of Automotive Engineers, in conjunction with the Automotive Air Conditioning Association.

If you guessed right the belt *may* not be damaged when the customer returned, *if* he returned. At any rate the customer is inconvenienced and becomes somewhat suspicious of what he bought.

Experience has shown that this problem can be eliminated nearly 100% by proper tools, namely: a belt tension gauge. Using the Burroughs 33-73A belt gauge, an initial tension of not over 100 on a new belt that is cold or at ambient temperature, will usually register 60 after 10 minutes initial break-in or seating. Since about half of this tension loss is due to a rise in belt temperature, a readjustment to a reading of 80 hot is equivalent to a reading of 100 cold.

Any adjustment of a new or seasoned belt in excess of a reading of 80 hot will result in breakage within three days. Provision must be made for shrinkage when belts are cool. Belt damage, from excessive tension, occurs when a belt cools and then is loaded.

Impossible To Tell Difference Between 80, 100 Tension

The pathetic thing about all of these facts is another fact that is not understood. It is *absolutely impossible* for the average person to detect the difference between a belt at 80 tension and a belt at 100 tension by rule of thumb.

A mechanic could readjust a belt properly at 80 or improperly at 100 or more and not know the difference. When the hot belt at 80 cools, the tension increases to about 110 or more and inevitably breaks on the next cold start.

Our firm has installed over 1,000 new belts in new equipment and service in the past 12 months by the gauge method. In every instance the owner was told specifically *not* to return for belt adjustment and we have *yet to readjust the first one.*

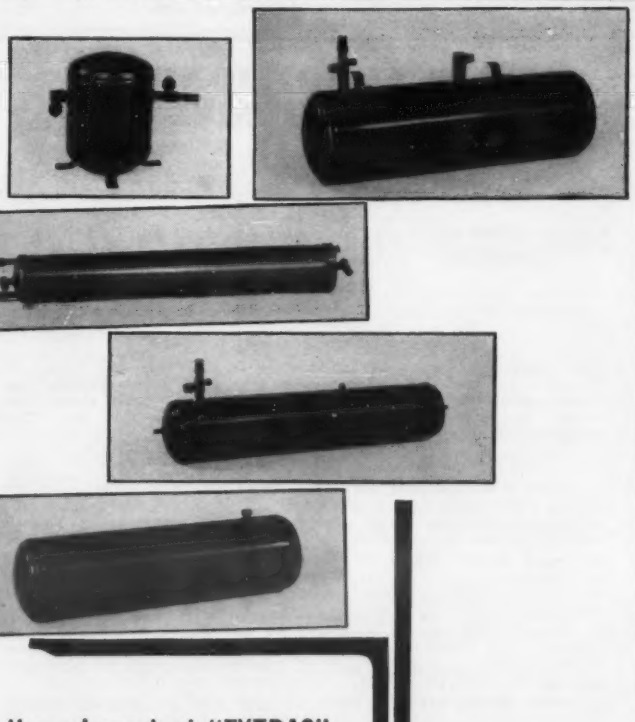
We have had premature belt failures of course, but in every instance the cause was found to be mechanical in nature, such as high head pressures, rough idler pulley bearings or pulley misalignment. Sometimes it is a human failure and due to running or forcing belts on instead of disassembly of an idler or clutch rotor.

"Shoot some more gas in" is an expression that has become almost pathetic. A clear sight glass cannot be taken into account the ambient temperatures or the radiated heat from the radiator to the condenser.

Accurate charging is impossible without the proper equipment. Charging cylinders today are clumsy, time consuming to fill and often waste refrigerant. Canned refrigerant seems to have the least objections.

I believe that belt tension specifications should be released to the trade and gauges made available. The belt manufacturer should install a tag on the belt calling attention to the proper tensioning. This would force the installer to remove the tag before use and be less likely to escape his attention.

I believe that systems should be designed to hold a specific amount of refrigerant and that a can of refrigerant be made available in that size.



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Acceptance Standards for Magnetic Clutches For Automotive Refrigerant Compressors

By F. C. Skelton, Senior Project Engineer, Warner Electric Brake & Clutch Co.

The title of this paper—"Acceptance Standards for Magnetic Clutches as Applied to Automotive Type Refrigerant Compressors" is admittedly quite lengthy and you might ask, just what does all this mean?

It means, first, what can the ultimate user of a magnetic clutch expect in the way of functional performance and, second, what does a magnetic clutch producer do to assure this?

Before we can establish acceptance standards, we must first develop design criteria for the clutch and the parameters of its usage. The particular compressor which the clutch is to couple to the engine crankshaft must be tested to determine its torque demand under various conditions of head and suction pressure. A strain gauge setup is used for determining these torque requirements.

Two Methods of Using Magnetic Clutch

Assuming that demand torque is therefore established and other considerations of design, such as physical size, pulley location, etc., are resolved, the parameters of usage must next be determined. At the present time, two methods of utilizing the magnetic clutch exist. The most common system is that in which the clutch is cycled due to thermostatic demand and the other method is, of course, that in which the clutch is utilized only initially to engage the compressor, and cooling is thereafter controlled by use of a by-pass system.

The capability requirements of the clutch to engage the compressor are no different for either of these methods. The clutch must, unfailingly, "pick up" the compressor at two optimum conditions.

(1) Engine idle speed; low voltage due to low idle speed, high head pressure and

(2) maximum engine speed, normal voltage, reduced head pressures.

The basic difference in these two methods, as far as the clutch is concerned, is the life of the friction surfaces.

When the magnetic clutch is utilized in conjunction with a by-pass system, the number of cycles which the clutch experiences is roughly one-fourth of number required for a system in which the clutch itself is thermostatically cycled. The following "Acceptance Standard" has been utilized for clutches for these applications:

Applications	Rpm	Head Pres.	Suction Pres.
15,000	500	395-405	50-60
15,000	4,500	170-180	13-17

For a thermostatically clutch-cycled system, the requirements are quite different. An acceptance or durability standard for this type of a system should consist of the following:

Applications	Rpm	Head Pres.	Suction Pres.
24,000	500	395-405	50-60
24,000	1,500	215-275	16-20
24,000	2,500	200-210	16-20
24,000	3,500	185-195	13-17
24,000	4,500	170-180	13-17

There are two additional qualifications common to both of these schedules and they are the requirements of voltage and temperature. The low rpm tests should be run at 10% below rated voltage, that is 10.8 volts for a 12-volt system and at an ambient temperature of from 190 to 210°F. The higher speed tests should be conducted at rated voltage and at a reduced ambient of 125-145°F. These specifications are representative of idle and highway conditions.

Again, what does all this mean to the ultimate user of the clutch? Independent testing indicates an over-all average of 1.128 applications per mile for a thermostatically-cycled clutch. Under a durability schedule as outlined above, the customer can expect 100,000 miles of satisfactory clutch operation.

A talk given at the 7th annual automotive air conditioning forum sponsored by the Texas Section, Society of Automotive Engineers, in conjunction with the Automotive Air Conditioning Association.

3 Basic Components

Magnetic clutches consist of three basic components which are subject to wear and other forms of deterioration. While the above noted scheduled or "Acceptance Standard" verifies the quality of these components, it might be well to enumerate these three items.

1. Working friction face
2. Coil
3. Bearing

The wear on the friction surfaces has been briefly discussed and is a direct function of the number of clutch applications.

The coil is subject mainly to deterioration from heat, thus the reason for testing at environmental temperatures. The life of the magnet wire insulation is dependent upon aging temperature. At 210°F (99°C) Class "O" (90°C) insulation would have an expected life of 20,000 hours. Twenty thousand hours would be approximately 10 years at 5 hours/day, 365 days/year. Thus if we can assume the "average" passenger car "averages" 10,000 miles/year the life of the coil is equivalent to the life of the working friction faces of the clutch.

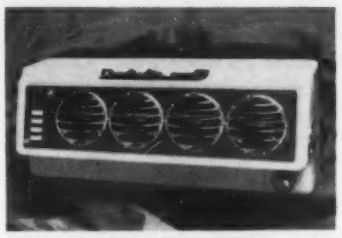
Bearings must also be selected to achieve a minimum life consistent with the other clutch components. Starting with 200 lb strand belt tension and working through the lengthy bearing life calculations, it will be noted that only a duplex or a double-row bearing installation will satisfy the conditions of 100,000 miles of life expectancy. Coupled with the bearing selection is the choice of a proper lubricant, seals to retain the lubricant and exclude the contaminants common to over-the-road uses.

How does a clutch manufacturer assure the user of this durability? The answer is through continued Quality Control and testing. While actual mobile testing is conducted, life tests of this nature are prohibitive from a cost standpoint. Laboratory tests are naturally used, and these tests should simulate as closely as possible the actual conditions.

Test stands consist basically of a variable speed drive, a mock-up of an engine front end, a controlled temperature and atmosphere chamber, and a 2-ton water-cooled refrigerant load system.

Utilization of such equipment and facilities thus enable the magnetic clutch manufacturer to conduct accelerated life tests and to assure his ultimate customers of a product that will meet or exceed an established acceptance standard.

'Climatrol' Unit Features Device for Rapid Cool Down



DALLAS — A new "Climatrol" auto air conditioner featuring a refrigerant flow control device that is claimed to "get the unit coldest the quickest" has been added to the line of five models offered by Climatic Air Sales, Inc. here.

The special "Climatrol" valve controls the amount of refrigerant flowing through the evaporator coils thus automatically regulating the air conditioner to keep a constant degree of temperature regardless of car speed and under all outside weather conditions, the manufacturer states.

He emphasizes that the Climatrol valve is not a by-pass valve. From a knob on the lower right hand corner of the under-dash unit, the driver can predetermine the temperature he desires and set the proper cooling.

The valve, the manufacturer asserts, prevents freeze-up, affords better gas mileage with less horsepower pull on the compressor, reduces head pressures while maintaining constant cooling, and eliminates clutch cycling along with wear and strain on belts, pulleys, and other parts.

Nordic Unit Provides 5 Openings For Maximum Diffusion of Air

FORT LAUDERDALE, Fla. —A new automobile air conditioner called the "Nordic Dial-air" has been announced by International Automotive Air Conditioning, Inc. here.

"Main feature of the unit is controlled diffusion through five adjustable louvers which provides maximum distribution of cool air, without direct air blasts, for passenger comfort," the company stated. "Both volume of air and degree of coolness are 'dialed,' providing an infinite combination of settings.

"Minimum restriction of air flow through seven openings on the modern, streamlined face of the unit, provides faster, more efficient cooling of the rear, as well as the front, of the car. The unit operates almost silently, with twin squirrel cage blower mounted in the rear," it is pointed out.

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4. **HOW MUCH DOES IT COST.** Charts show you how to estimate seasonal operating costs. You'll find ways and means to keep costs down.
5. **HOW BIG A UNIT.** Why it is better to have an air conditioning unit too small than too big. Examples are given on how to estimate heat gain.
6. **HOW DOES IT WORK.** Installation diagrams and operating characteristics of many representative systems. Many of the pitfalls are spelled out. Also you will find helpful summaries of service problems.
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Installing Cooler In Foreign Cars Involves Extra Labor

DALLAS — There's a good market for air conditioning in foreign makes of automobiles, but the installer must realize that the special steps to be taken in installing units in many of the imports make it vital that proper labor allowance be included in the price, if any profit is to be realized.

So states William E. Anglin, president, Capitol Refrigeration, Inc., whose "Artic-Kar" auto air conditioners are adaptable to a wide range of foreign cars.

Anglin believes this matter of installation labor time to be so important that he has developed a table of probable hours of labor in installing air conditioning in the foreign makes. Following are some samples from this table:

Anglia Ford sedan, 5 hours; Austin sedans, (under dash) 7 hours, (trunk) 11 hours; Bentley, 22 to 25 hours; Borgward, 6.7 hours; Fiat 4-cylinder, 6.5 hours; Hillman Minx (under dash) 7 hours, (trunk) 11 hours; Jaguar 2.4 Litre sedan (special under dash) 9.5 hours, 3.8 Litre sedan (trunk) 14 hours; Karman Ghia, 8 hours.

Lancia V-6 (under dash) 11 hours, (trunk) 14 hours; Mercedes-Benz 180 & 190-S sedan (under dash) 16 hours, (trunk) 18 hours; Mercedes-Benz 190-D diesel, 8 hours; Mercedes-Benz 300-SL convertible (special built-in) 30 hours; MG "A", 8 hours; Opel, 4 hours; Porsche, 9 hours; Renault Dauphine, 6.5 hours; Rolls-Royce V-8 sedan (trunk) 25 hours; Simca, 4.5 hours; Triumph TR-10, 6 hours; Vauxhall sedan (under dash) 4 hours, (trunk) 8.5 hours; Volkswagen sedan (built-in) 7 hours, (trunk) 11 hours; Volkswagen bus & camper, (custom unit) 24 hours.

Heat Pump Accessory Converts Artic-Kar Unit Into Heater

DALLAS—A heat pump accessory for its "Artic-Kar" air conditioner that converts the unit into a heater as well as a cooling device has been announced by Capitol Refrigeration, Inc. here.

W. Y. Humphreys, sales manager, said the heat pump, achieved by adding a four-way reversing electric valve, transforms either the "Sno-Cap" or "Iceberg" fan model air conditioners into heaters by a flip of a switch.

The air conditioners will deliver 28°F coil temperature on the air conditioning cycle and 140° temperature on the heating cycle. Approximately 30 to 55 seconds elapse between extreme temperatures, he said.

Air delivery ranges from 200 to 350 cfm, depending on model.

Humphreys pointed out that because customers can switch their Artic-Kar air conditioner from one car to another, they can save the cost of a factory installed heater on succeeding cars.

The Artic-Kar unit features an "indirect" setting on the evaporator when fan motors are reversed, blowing air forward and along the floor. This setting is used for rapid defrost. It also removes hot air from floorboard area in summer and cold dampness in winter.

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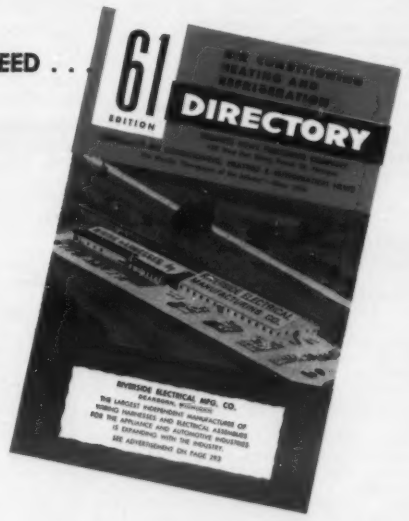

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Text of NHAW Resolution Condemning Practice of Promoting 'Buy Direct'

CINCINNATI — The Northamerican Heating & Airconditioning Wholesalers Association has released the full text of the strong resolution, adopted by the general membership at the group's last convention, condemning the practice of promoting "Buy Direct."

The text follows:

"Whereas, certain manufacturers, DTU operators and pseudo-wholesalers in this industry are continually promoting to the consuming public that by 'buying direct,' they save the so-called middleman's profit and further mislead the consumer with promises of wholesale prices, and 'undivided product responsibility,' and

"Whereas, to the well informed, these are obvious untruths and misrepresentations, and

"Whereas, in all these cases the ultimate consumer suffers from inadequate service, improper and poorly engineered installations, and

"Whereas, the ultimate consumers' comfort and health is not assured under this type of practice, and

"Whereas, the industry as a whole, has suffered irreparable damage because of these practices,

Therefore be it resolved that the Northamerican Heating & Airconditioning Wholesalers Association, in meeting assembled in Detroit, Nov. 18, 1960, take a firm stand in the interest of properly engineered, sound comfort systems of heating and cooling in the home; that we insist on adherence to the Code of Ethics of the Association, and strongly condemn these practices which are misleading and damaging to the health and welfare of the consumer; and that we resolve that any person or company who denies by any act or word, wholesaling as an essential part of marketing to have forfeited their right to membership in this Association."

Hartford, Conn. To Hear Story Of Silver Shield

HARTFORD, Conn. — At a meeting scheduled for Wednesday evening, April 19, at the auditorium of the Hartford Gas Co., heating and air conditioning dealer-contractors from the Greater Hartford marketing area will get first-hand the full story of the Silver Shield Program that is spreading throughout the United States.

Cooperating with the National Warm Air Heating & Air Conditioning Association in planning the meeting is Hartford Silver Shield Action Committee, consisting of:

Anthony Lerzo, Atlas Heating & Cooling Co., New Britain; T. P. Aitkin, of Tolland Turnpike, Manchester; Norman Bentz, Manchester; Louis Cooper, Cooper Bros., Hartford; William Stanwicks, Gas Heat & Engineering, West Hartford; John Quigley, Reliance Sheet Metal, Simsbury; David Rutt, Simon Rutt, Inc., Bloomfield; Robert Lynch, Better Home Heat Council (oil), Hartford; J. B. C. Thomas, Hartford Electric Light Co.; and E. R. Kryzak, of The Hartford Gas Co.

Warm Air Furnace Shipments Off During January

WASHINGTON, D. C.—January shipments of gravity and forced warm air furnaces totaled 76,637 units, 2% below the level of a year ago, the U. S. Bureau of the Census reported recently.

January inventories at the manufacturer's level numbered 204,265 units, up 17% over the same month last year. Of this total, 186,676 were classed as winter air conditioning units, while 17,589 were gravity units.

A comparison of fuels indicated that gas increased its proportion of total shipments to 80.4% as compared with 78.8% in the first month of 1960. Oil furnace shipments dropped from 19.5% to 18.4% and coal from 1.7% to 1.1%.

While gravity furnaces represented only 3.8% of shipments in January, this represented an increase from the 3.1% last year. Gravity furnace shipments increased in January to 2,880 units from 2,449 units.

National Warm Air Heating & Air Conditioning Association commented that this is the first time this has occurred in recent years.

Iron Fireman Sets Up Special Task Force For 'SelecTemp' Units; Lunt Named

CLEVELAND—As part of a management program aimed at "Higher Quality in '61," the Heating & Cooling Div. of Iron Fireman Mfg. Co. here is setting up a special "task force" for its "SelecTemp" heating system.

R. F. Lunt

General Sales Manager Howard M. Cutshaw said the sales and installation of this system will be conducted by a newly-appointed team — to be composed for the most part of engineering sales representatives.

Any dealers admitted to the marketing of SelecTemp must first prove they have the special engineering know-how required, Cutshaw said.

SelecTemp, as described by Cutshaw, is a complete temperature control system designed for low-cost operation in commercial structures with a large number of rooms. It was introduced by Iron Fireman several years ago.

"This stress on high quality is not just a slogan," Cutshaw said. "It means exactly what it says. SelecTemp, for example, is a proven product. But, to assure really top-notch application of this unique design we're going to require and insist on its being marketed by men with a really solid engineering background."

In line with the new program, R. F. Lunt has been advanced from assistant to the general sales manager to SelecTemp sales manager, it was also announced.

February Shipments of Residential Gas Central Heating Boilers, Furnaces Rally

NEW YORK CITY — Manufacturer shipments of residential gas central heating furnaces and boilers in February were, respectively, 1.5 and 0.7% higher than the unit sales reported for the same month of last year, according to the Gas Appliance Manufacturers Association.

Gas furnace makers dispatched 60,100 units during the month, compared to 59,200 sent to market in February, 1960. Gas boiler producers shipped 8,314 units in February; the year-ago total was 8,255.

GAMA's monthly telegraphic survey of manufacturers also showed that 5,400 conversion burners were shipped. The February figure for this equipment was 34.1% less than the 8,200 units dispatched in February of last year.

Combined shipments of all three types of central heating equipment totaled 73,814, a 2.4% decline from the 75,655 units reported last year. Sales of the three types for the first two months of this year amounted to 148,601 units, 0.5% less than the 149,276 sent to market in the same period of 1960.

The January-February totals for each type were: Furnaces—119,700 this year and 118,900 last year, for an increase of 0.7%; boilers—17,101 this year and 15,075 last year, for an increase of 13.4%; and conversion burners—11,800 this year and 15,300 last year, a decline of 22.9%.

The February and two-month shipment figures for other types of gas heating equipment were as follows:

Vented recessed wall heaters—20,500 units dispatched in February, 16% less than the 24,400 shipped in February, 1960. This year's two-month total was 48,100, a decrease of 5.9% from last year's 51,100.

Room heaters and other types of gas direct heating equipment—The February figures were 38,800 this year and 45,200 last year, a drop of 14.2%. Two-month totals were 77,100 this year and 86,700 last year, an 11.1% decrease.

Gas floor furnaces—This year's February sales accounted for 3,700 units, a 9.8% drop from the 4,100 furnaces dispatched in the same month of 1960. The two-month total showed a 5.1% increase, however. This year's figure was 8,200, compared to last year's 7,800

Gas unit heaters and duct furnaces—Shipments of this equipment showed decreases of 4.3% for February and 5.6% for the two months. The February figures were 13,500 this year and 14,100 last year. The two-month totals were 25,400 this year and 26,900 last year.

Electric Heat Parley Set for March, 1962

NEW YORK CITY — K. M. Spurrier, central sales manager, Hunter Div., Robbins & Myers, Inc., has been appointed general chairman of the Second National Electric Comfort Heating Symposium and Exposition.

The program will be staged March 19-21, 1962, in the Sherman hotel, Chicago, by the Electric Comfort Heating Equipment Section of the National Electrical Manufacturers Association.

Announcement of the new general chairman and the following committee members was made by Stanley B. Aronson, section chairman and sales manager, Berko Electric Mfg. Corp.:

P. D. Hawkins, sales manager, Electromode Div. of Commercial Controls Corp.; W. H. Hawkins, sales manager, Sun-Tron; F. E. Warner, assistant sales manager, built-in heating, Markel Electric Products, Inc.; R. D. Graham, general manager, Electric Resistant Comfort Heating Section, Wiring Device Dept., General Electric Co.

As at the first program, the second symposium and exposition will feature exhibits of comfort heating equipment, addresses by industry leaders, and panel discussions on consumer and technical problems.

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REFRIGERATION AND air conditioning mechanic—13 years' experience with own business of servicing and installing commercial equipment. Wishing to re-locate in Florida—can furnish any references. Please state hourly rate and benefits. Write P. O. BOX 63, Ravenna, Ohio.

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AIR CONDITIONING, wholesale sales manager with proven sales and engineering experience with heating and packaged cooling. Will offer salary, bonus, and expenses. No overnight traveling necessary. All inquiries held confidential. Send brief resume to well established York distributor. THE HATTENBACH COMPANY, 4700 Prospect Avenue, Cleveland 3, Ohio.

REFRIGERATION SALES engineer. Leading refrigeration and air conditioning contractor in Chicagoland needs man experienced in sales and design of commercial and industrial refrigeration. Compensation open. Call John Schurman, HArrison 7-8900, MURPHY & MILLER, INC., 600 West Taylor St., Chicago 7, Illinois.

FIELD REPRESENTATIVE: Applicant must be a mechanical engineer with practical experience. Also, the ability to handle groups involved in trade association work. Job available immediately. Send resume and photo to: BOX A6746, Air Conditioning, Heating & Refrigeration News.

EXPERIENCED PROJECT engineer—for position with Midwest division of national manufacturer of air conditioning, refrigeration, and heating products and equipment. Heating design experience coupled with some experience in air conditioning or commercial refrigeration required. Assignment will be in design and project coordination of heating and commercial refrigeration products. Submit resume and salary requirements to BOX A6753, Air Conditioning, Heating & Refrigeration News.

EQUIPMENT FOR SALE

BRAND NEW icemaker pump motor and impeller repair kits for Scotsman Carrier $18.00 at Kesco wholesalers coast to coast. Bronze replacement icemaker pumps for York Carrier $29.95. Hose connection adaptors for York Carrier $1.00. Complete line condensate pumps from 10' to 50' head. 115-208-230 volts. Catalog. KESCO, Jamaica 13, N. Y.

ATTENTION REFRIGERATION Servicemen. Send for catalog listing values in refrigeration and air conditioning parts, relays, capacitors, compressors. Savings up to 50%. WALTER W. STARR, 2833 Lincoln Ave., Chicago 13, Illinois.

UNITED CONTROL and Relay Repair Co. Domestic controls, relays, defrost timers, new controls and relays in stock. Prompt mail order service. 151 E. 126 Street, New York 35, N. Y.

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FOR LEASE—Refrigerated storage in Houston. Will lease reasonably all or part of 40,000 square feet. One of the finest refrigerated facilities in the Southwest. Thermostat-controlled, both dry and wet cold storage. Modern and new, centrally located with east access. Includes railway siding, conveyers, and air-conditioned office space. Will lease with option to buy equipment. Contact NED GILL, Oil & Gas Building, CA 5-0234, Houston, Texas.

AIR CONDITIONING, refrigeration business for sale. Midwest's finest resort area just beginning to boom. Over 500 tons of established air conditioning accounts alone. Two men can do $80-100,000 annually. Ideal setup for good serviceman with air conditioning and heating experience. Under $15,000. Other interests require owner's full time. BOX A6764, Air Conditioning, Heating & Refrigeration News.

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ATTENTION SERVICEMEN — More than one half million refrigeration compressors are operating with 'Chicago' replacement valve plates and seals. See your wholesaler. CHICAGO VALVE PLATE & SEAL CO., 6960 W. Grand Ave., Chicago 35, Illinois.

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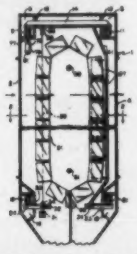
PATENTS

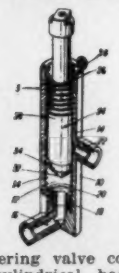
Week of Dec. 13 (Concluded)

2,964,125. ELECTRICAL PRECIPITATOR. Stig G. Sylvan, Louisville, Ky., assignor to American Air Filter Co., Inc., Louisville, Ky.



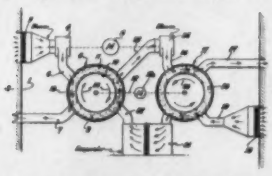
1. In an electrical precipitator having a housing with gas inlet and gas outlet means spaced to define a gas flow passage therebetween, an ionizing section disposed in said gas flow passage adjacent said gas inlet means, said ionizing section including elongated ionizing electrode means and collecting electrode means extending adjacent and across said gas inlet means, said collecting electrode means being spaced from said ionizing means on opposite sides thereof. . . .

2,964,288. VALVES. Edward William Holmes, Manor Cottage, Doddinghurst, and George William Francis Richards, 33 Fontayne Ave., Chigwell, England.



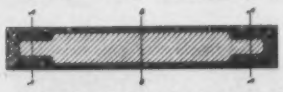
1. A metering valve comprising an internally cylindrical body, a screw thread in said body, an axial inlet at one end of said body, a first valve seat surrounding said inlet, a lateral outlet in said body spaced from said inlet, a valve spindle threadedly received in said body through the other end thereof, a second seat at one end of said spindle for cooperation with said first seat, said spindle having an annular recess at its end immediately adjacent said second seat. . . .

2,964,298. AIR CONDITIONING SYSTEM. Harold A. McIntosh, 517 Floral Park Terrace, South Pasadena, Calif., and James Wilson Stockton, 4420 Lakeside Drive, Burbank, Calif.; said Stockton assignor to said McIntosh.



1. In a system of the character described, a plurality of heat exchangers; each heat exchanger including a group of elements made of a material that is capable of transferring heat and forming a continuous layer, said elements having such cross-section as to facilitate their rapid cooling and heating, said elements being loosely confined to provide air circulation between elements; a pair of first conduit means respectively for the two exchangers, each conduit means serving to pass air to and from the respective exchanger, so that first air streams pass respectively at any instant through a portion of the associated exchangers. . . .

2,964,435. SEMICONDUCTOR DEVICES AND THEIR MANUFACTURE. Ernest Paskell, Grove City, Ohio, assignor, by mesne assignments, to McGraw-Edison Co., Milwaukee, Wis.



1. A semiconductor device comprising a wafer of semiconductive material of a prescribed conductivity type and defining a cross-sectional area including first and second portions having an impurity diffused therein, said impurity imparting to said portions a conductivity type opposite said prescribed type, the depth of said impurity in said first and second portions being different levels, said portions and said prescribed conductivity area jointly defining integral parallel graded junctions.

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

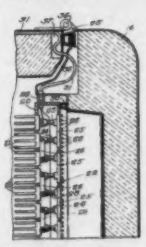
Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D. C.

Week of Dec. 20

2,964,830. SILICON SEMICONDUCTOR DEVICES. Herbert W. Henkels, Milford Township, Somerset County, and David L. Moore, Hempfield Township, Westmoreland County, Pa., assignors to Westinghouse Electric Corp.

In the process of producing a semiconductor device, the steps comprising (A) heating to a maximum temperature of between 800°C and 1,000°C a superimposed assembly of (1) an end contact composed of a metal from the group consisting of molybdenum, tungsten and tantalum and base alloys thereof, (2) a thin layer of a silver solder, (3) a wafer of N-type silicon, (4) a thin layer of an aluminum material selected from the group consisting of aluminum and aluminum base alloys, said layers capable of conferring P-type semiconductivity to the silicon wafer, and (5) another contact member of a metal selected from the group consisting of tantalum and tantalum base alloys applied to the layer of aluminum material. . . .

2,964,912. REFRIGERATING APPARATUS INCLUDING SUPPLEMENTAL REFRIGERATING MEANS. John Roeder, Jr., Benton Harbor, Mich., assignor to Whirlpool Corp., a corporation of Delaware.



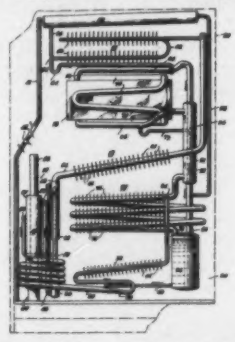
1. Refrigerating apparatus comprising: an enclosure defining a first chamber adapted to contain heat perishable items; means for refrigerating said first chamber; a relatively small, second chamber; and thermoelectric refrigerating means having a plurality of heat absorbers exposed to said second chamber for cooling the second chamber and a plurality of heat dissipators exposed to said first chamber for cooling the dissipators.

2,964,920. REFRIGERATION. Lloyd A. Staebler, Oreland, Pa., assignor to Philco Corp., Philadelphia, Pa.

4. The method of producing and storing ice masses, which comprises: forcibly engaging a pliant bag or membrane, containing water to be frozen, by mold structure having a plurality of openings, thereby bulging the water filled bag into the openings; and freezing the water while so confined.

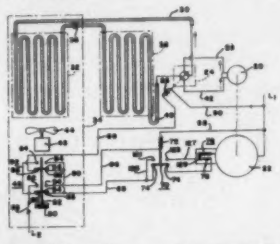
2,964,921. ABSORPTION REFRIGERATING SYSTEM. Kirk C. Kirkorian, South Norwalk, Conn., assignor to Kirk Industries, Inc., a corporation of Delaware.

4. In an absorption refrigerating system of the type wherein liquid refrigerant is vaporized into a stream of inert gas in an evaporator protected by an insulated shell to produce a refrigerated area in the system, the method which comprises the steps of bringing liquid refrigerant which is being supplied to the evaporator into physical contact with inert gas in an area removed from the said refrigerated area of the system, conducting said gas and liquid refrigerant in physical contact for a distance at least twice that of the thickness of the insulated shell before said gas and liquid enter the refrigerator area and bringing spent refrigerant into physical contact with inert gas which is being supplied to the evaporator in



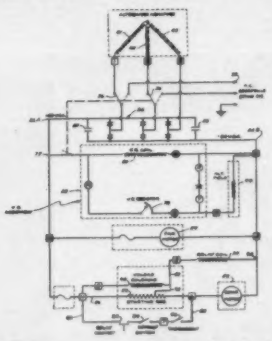
an area which is removed from the said refrigerated area of the system....

2,964,922. REFRIGERATING APPARATUS. James A. Canter, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



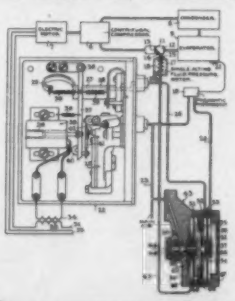
9. A refrigerating system including a first heat transfer unit, a second heat transfer unit thermally isolated from said first unit, a flow control connecting said units, an electric motor and a compressor driven by the electric motor for withdrawing evaporated refrigerant from one of the units and for forwarding compressed refrigerant to the other unit, a thermal overload protector for said electric motor, an electric heater associated with said protector, and a thermostatic control having a cool position for energizing said heater and a warm position for de-energizing said heater.

2,964,923. REFRIGERATION SYSTEM. William H. Cone, Waterloo, Iowa, assignor to Construction Machinery Co., Waterloo, Iowa, a corporation of Iowa.



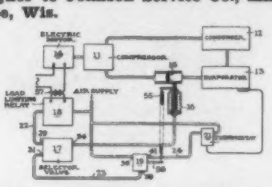
6. In a control circuit for refrigeration systems, a source of direct current output having a positive terminal and a negative terminal, a compressor motor adapted to operate a compressor in a refrigeration system, an unload solenoid adapted to actuate a valve in a compressor unloading conduit in a refrigeration system upon being electrically excited, a starting resistor and said compressor motor electrically connected in series between said positive and negative terminals with said motor being on the negative side of said resistor. . . .

2,964,924. REFRIGERANT FLOW CONTROL APPARATUS. Austin P. Dodge, Bethesda, Md., assignor to Johnson Service Co., Milwaukee, Wis.



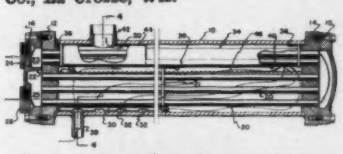
1. In a compressor-condenser-evaporator refrigerative circuit unit of the type including adjustable throttling means for varying the rate of refrigerant flow through the compressor and an electric motor serving to drive the compressor, the combination of control means shiftable in opposite directions to adjust said throttling means; pressure motor means for shifting said control means and having two opposed working spaces, respectively for shifting the throttle in opening and in closing directions. . . .

2,964,925. COMPRESSOR CONTROLS. Norman J. Janisse, Grafton, Wis., assignor to Johnson Service Co., Milwaukee, Wis.



1. In a compressor-condenser-evaporator refrigerative circuit unit of the type including and electric motor to drive the compressor and throttling means adjustable to vary the rate of refrigerant flow through the compressor, the combination of control means to adjust the throttling means comprising in combination a fluid pressure-operated actuator connected with the throttling means to adjust it; a selector valve mechanism having two inlet connections and an outlet connection, said outlet connection connected to the actuator. . . .

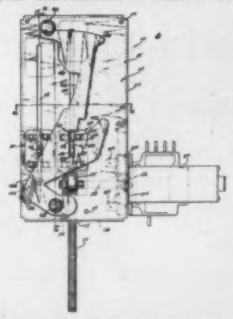
2,964,926. FLOODED WATER CHILLER. Chester D. Ware, La Crosse, Wis., assignor to The Trane Co., La Crosse, Wis.



1. A heat exchanger comprising a shell, support members closing the ends of said shell, a plurality of tubes supported by and extending through said supporting members, means in communication with said tubes to circulate fluid in said tubes, a liquid refrigerant-oil mixture inlet means at the bottom of said shell, a perforated fluid distributor member located over said mixture inlet means. . . .

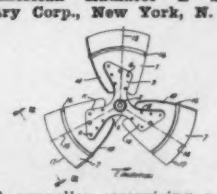
2,964,966. AIR CONDITIONER CONTROL. Nicholas Miller, Chicago, Ill., assignor to Dole Valve Co., Chicago.

1. In an apparatus of the class described, a casing, a first bar slidably guided in said casing for rectilinear movement therealong into more than two control positions, a second bar slidably guided in said casing for movement parallel to movement of said first bar into more than two control positions, an interlocking plate pivotally mounted on said casing for coordinating movement of said bars, said interlocking plate having spaced camming surfaces on one side thereof engaged by said first bar to effect pivotal movement of said interlocking plate upon movement of said first bar



into certain control positions and also having a camming surface on the side thereof adjacent said second bar engaged by said second bar upon movement thereof into certain control positions for effecting movement of said interlocking plate into positions to prevent movement of said first bar into certain operative positions and also having a movement limiting slot in communication with said camming surface associated with said second bar for limiting movement of said second bar in accordance with a control position of said first bar.

2,965,180. PROPELLER FAN WHEEL. Harry R. Killam, Livonia, Mich., assignor, by mesne assignments, to American Radiator & Standard Sanitary Corp., New York, N. Y.



1. A propeller comprising a tubular hub; a steel spider plate secured to the hub and having a plurality of integrally formed arms radiating outwardly therefrom; the outer end portions of said arms being tilted in a downstream direction; said outer end portions having a substantially constant circumferential curvature around lines radiating from the hub axis and located substantially midway of the arm lateral edges; a gasket positioned on one face of each of the arms; aluminum blades secured on the exposed faces of the gaskets and conforming to the tilt of the arms. . . .

(To Be Continued)

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Greensboro To Hear Silver Shield Program

GREENSBORO, N. C.—Heating and air conditioning dealer-contractors from the Greensboro-High Point and Winston-Salem area will hear about the Silver Shield program at a

(See related story on page 42)

meeting scheduled for Wednesday evening, April 26, at the Piedmont Natural Gas Co. service building here.

Cooperating with the National Warm Air Heating & Air Conditioning Association is an Action Committee consisting of Tom C. Farquhar, T. C. Farquhar Co.; Walter Davenport, Davenport & Co.; James Glass, Sedgefield Heating & Air Conditioning Co.; and Graham Glasgow, Graham Glasgow Heating & Air Conditioning Co., all of Greensboro.

Silver Shield--

(Continued from Page 1, Col. 1)

tended by representatives of northern Indoor Comfort bureaus, will be held on Saturday, May 6, at Hotel Statler-Hilton in Cleveland.

The same agenda will be followed in both meetings and will include discussions on Silver Shield System design, installation, sales, and promotion, together with methods of efficient Indoor Comfort Bureau organization and operation.

The meetings are planned, conducted, and operated by the Silver Shield dealers themselves. Presiding at the southern meeting will be Charles Graham, vice president of the Silver Shield Comfort Bureau of Davidson County, Nashville, Tenn.

Glen Rynbrand, executive secretary of the Kalamazoo Indoor Comfort Bureau, will be chairman of northern meeting.

Roberts--

(Continued from Page 1, Col. 1)

uct managers in the packaged products and engineered machinery divisions. He will report to Austin Rising, vice president and manager of marketing.

Roberts joined Carrier in 1953 and served as research and application engineer, senior development engineer, and manager of systems engineering before becoming development manager.

Prior to that, he was assistan professor of mechanical engineering at New York university, instructor of mechanical engineering at Northwestern Technological Institute and is co-author of the reference book "Modern Air Conditioning, Heating and Ventilating" by Carrier, Cherne, Grant, and Roberts.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Electric Heat Jurisdiction--

(Continued from Page 1, Col. 2)

unit, from zero to 5 kw, or auxiliary heat, fully electrical, same should appear in electrical part of specifications to both furnish and install.

2. **"Electric Baseboard Type Heating,"** for package baseboard unit, where surface heaters is part of mechanical design, mechanical should furnish, but physical installation should be electrical.

Filler pieces generally are for sheet metal. For continuous insert types, mechanical should furnish and are responsible for final appearance, and electrical should install as they are responsible for safety.

3. **"Electric Unit Heaters,"** of completely self-contained fan type units, electrical should furnish and install.

4. **"Electric Duct Heaters"** Description, Fan coil units within ducts with electric heating a part of air conditioning system and unit a part of ductwork system.

If heater is to be assembled and put together, it would be an electrical installation, with heater components furnished by mechanical. If unit is to be put in place, it would be an electrical installation.

If air conditioner and electric heating unit is of a one package fabrication, it would be a mechanical installation, and the electrical contractor would make the electrical connections.

5. **"Combination (Package) Electric Heating, Air Conditioning,"** Mechanical to both furnish and install.

6. **"Controls (Starters-Contactors),"** Mechanical to furnish and electrical to install.

7. **"Temperature Sensing Devices,"** Mechanical to both furnish and install.

8. **"Control Wiring,"** Mechanical to furnish and be responsible for installation by electrical.

9. **"Power Wiring from Disconnecting Means,"** Electrical to both furnish and install.

10. **"Combination Starter-Disconnect,"** Electrical to both furnish and install.

The joint committee, headed by O. V. Scott, included electrical, mechanical, and sheet metal contractors; electrical and mechanical consulting engineers; and representatives of National Electrical Contractors Assn. Atlanta chapter, Central Georgia Sheet Metal Contractors Association; Mechanical Contractors Assn. of Atlanta, Inc.; Local Union No. 613, IBEW; Local Union No. 85, SMWIA; and heads of the mechanical and electrical departments of the City of Atlanta.

Committee secretary was C. V. Brownlee, manager of the Atlanta mechanical contractors group.

Copies of the suggestions are being sent to all members of the various groups as well as to architects and engineers who are currently serving the greater Atlanta area.

In an accompanying letter to the members of his group, Brownlee emphasizes that "the committee was guided largely by the independent opinion survey made by the Consulting Engineers Association of Georgia, and the end result is therefore of professional character. You will note, however, the wide range of representation before the committee of interested parties. . . ."

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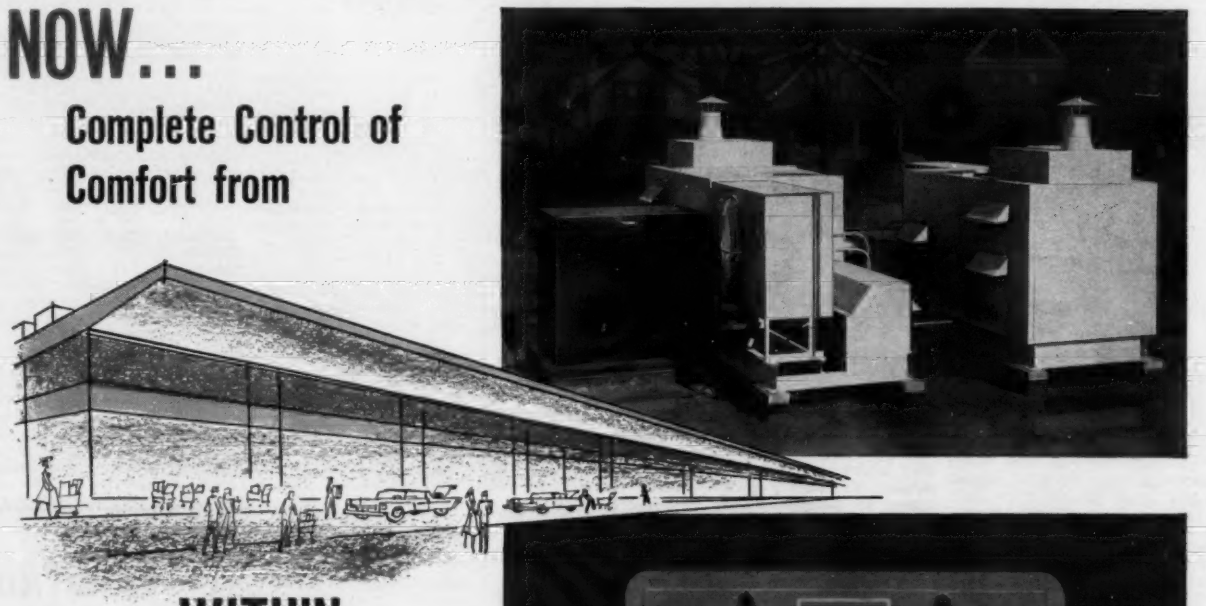

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